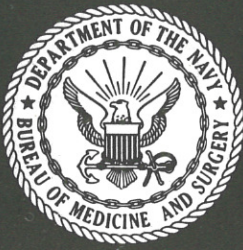


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UNITED STATES NAVY *Medical News Letter*

Vol. 46

Friday, 23 July 1965

No. 2



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United States Navy
MEDICAL NEWS LETTER

Vol. 46

Friday, 23 July 1965

No. 2

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The U.S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, sus-

ceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

Change of Address

Please forward changes of address for the News Letter to: Commanding Officer, U.S. Naval Medical School, National Naval Medical Center, Bethesda, Maryland 20014, giving full name, rank, corps, and old and new addresses.

FRONT COVER: The U.S. Naval Hospital, Portsmouth, New Hampshire, occupies 15.35 acres at the northeast corner of Seavey's Island in the Piscataqua River between Portsmouth, New Hampshire, and Kittery, Maine. The remainder of the island is occupied by the Naval Shipyard, Naval Disciplinary Command, Naval Reserve Training Center, and U.S. Marine Barracks. Seavey's Island is located within the geographical confines of the State of Maine, although due to the limited facilities in Kittery, Maine, the official postal address is Portsmouth, New Hampshire.

The original hospital was started in 1834 when a small frame building in the first navy yard, built in 1802, was remodeled for this purpose. It accommodated ten patients. In 1865, certain alterations were made, increasing the capacity of 25 beds. In 1866, Seavey's Island was purchased by the government for \$105,000 and the new navy yard established. Congress, on 2 March 1889 and 30 June 1890, appropriated a total of \$43,000 for a new hospital building. Construction was started in 1890 and the hospital was commissioned on 21 December 1891.

The second hospital was a brick building 83 feet long by 54 feet wide with three stories and could accommodate 29 patients.

In 1913 the main building of the present and third hospital was completed at a cost of \$339,000 borne by the Naval Hospital fund.

From 1917 until the present time, various buildings have been constructed to meet the existing requirements.

The issuance of this publication approved by the Secretary of the Navy on 4 May 1964.

U.S. NAVY MEDICAL NEWS LETTER

FEATURE ARTICLE

WHAT'S NEW IN THE MANAGEMENT OF THE INJURED

MANNITOL

PAUL M. WEEKS MD

Mannitol is a hexahydric alcohol structurally related to mannose. It is a crystalloid compound with a molecular weight of 182 and marked hygroscopic characteristics. It is not metabolized and is almost completely excreted by glomerular filtration with no reabsorption within the nephron. Mannitol has been utilized in the physiologist's laboratory for many years to measure glomerular filtration rate and only in the last decade has its clinical value become evident.

Physiological Effects

As a result of its inertness, the physiological effects of intravenous mannitol are limited to two areas: 1) that of transport (the vascular system) and 2) that of excretion (the renal system). The degree of alteration in these areas is dependent upon the rapidity of drug administration.

Mannitol permeates cells so poorly that it is limited almost exclusively to the extracellular fluid compartment. As a result of its hygroscopic property, rapid intravenous administration results in a rise in plasma osmolality which is accompanied by withdrawal of cellular water into the vascular system. This produces a dilutional hyponatremia, an expansion of the extracellular fluid volume, a fall in the hematocrit and a crenation of the circulating red cells.

Prolonged administration can produce a hypernatremia. That is, extended diuresis of large volumes of urine with a high water to sodium ratio can eventually result in a relative elevation of the serum sodium concentration.

Renal Effects

Mannitol is filtered through the glomeruli and is not excreted or reabsorbed within the nephron. Con-

flicting studies have been reported on the influence of mannitol on renal blood flow, glomerular filtration rate and the renal tubule. These will be discussed separately.

Renal Blood Flow. Hostnik (1959) measured renal venous blood flow in dogs and concluded there was no increase in renal blood flow after a "loading" dose of mannitol. He did note an increase in renal blood flow when a rapid infusion of mannitol was given in addition to the "loading" dose. Judd (1964) measured renal blood flow directly and reported no significant increase after mannitol infusion.

Lilien (1963), measuring blood flow by direct catheterization, reported a 31 per cent increase in renal blood flow and a 34 per cent decrease in renal vascular resistance following infusion of dogs with mannitol. Stahl (1965), utilizing flowmeters about the renal arteries, reported a significant increase in renal blood flow with mannitol infusion.

The weight of evidence now is in favor of increased renal blood flow following mannitol perfusion. It is important to determine whether such increase may be secondary to the hemodilution and decreased viscosity of blood that accompanies mannitol administration.

Glomerular Filtration Rate. Moore (1963) expressed the opinion that mannitol must increase the renal blood flow and subsequently the glomerular filtration rate. He noted from clinical observations that the administration of mannitol to oliguric or anuric patients of long standing may initiate a diuresis. This, he opined, could only have occurred by an increase in glomerular filtration as mannitol is an osmotic diuretic and must be delivered to the tubules to be effective.

Stahl (1965) demonstrated that infusion of mannitol results in an increase in renal blood flow without an increase in glomerular filtration rate as meas-

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ured by inulin clearance. He suggested that the increased flow of blood was perfusing medullary, not glomerular, tissue since his measurements of renal tissue pressure were increased. Further, it has been firmly established that solute and water excretion can vary without changes in the glomerular filtration rate (Barger, 1959).

Renal Tubular Effects. Earlier it was thought that a mannitol diuresis was purely an osmotic phenomenon. That is, after filtration through the glomerulus the hygroscopic characteristics of mannitol resulted in an attraction of water into the proximal tubule; a portion of which later appears in the bladder.

At this point one must recall the countercurrent theory of Hargitay and Kuhn (1951) to fathom the tubular effects of mannitol. They have suggested the presence of a solute pump in the ascending limb of the nephron which transports solute from the urine to the interstitial fluid. It then diffuses from the interstitial fluid to the descending limb. As the urine flows down the limb it becomes more concentrated, while as it moves up the ascending limb it becomes more dilute. Such a countercurrent multiplier system will establish an osmotic gradient along the length of the renal pyramids. This system is made possible by the parallel hairpin loop of the vasa recta vasculature of the medulla. As the medullary blood flow increases, it tends to "wash out" the concentration gradient at the renal medullary tip thus enhancing water and solute excretion without increasing glomerular filtration rate. In this light, the studies of Stahl have added significance.

And finally, it has not been determined if mannitol has a direct metabolic effect on the tubular cells. Be that as it may, a diuresis results from the intravenous administration of mannitol.

Indications for Clinical Use of Mannitol

The prevention of modification of acute tubular necrosis is the assumption for the use of mannitol after trauma, such as burns, injury, hemorrhage, or shock.

Therapeutic use of mannitol, in cases of renal ischemia and a circulating pigment load, is well founded experimentally. Prophylactic administration, of necessity, is less well studied.

Selkurt (1945) demonstrated the protective effect of mannitol on kidneys rendered totally ischemic for twenty minutes by occlusion of the renal artery. Owen (1953) demonstrated this protective effect in ischemic dog kidneys exposed to circulating methemoglobin. Parry (1963) administered mannitol

to rats in acute renal failure as the result of a pigment load and noted 99 per cent (86/87) survival in the treated animals as compared to only 6.5 per cent survival in the control group. Dawson (1964) prepared ischemic jaundiced kidneys in rats and demonstrated the protective effect of mannitol both on mortality and progression of the renal lesions.

Experience with human patients is obviously limited to clinical experience. Dudley (1957) suggested that the use of mannitol is beneficial in the severely burned patient who developed oliguria and methemoglobineuria in spite of adequate plasma and blood replacement.

The use of mannitol is indicated in prolonged surgical procedures on patients with pre-existing renal disease, particularly the jaundice patient. Renal ischemia developing during anesthesia is not uncommon.

Nanson (1959) noted the high incidence of acute tubular necrosis following abdominal aortic surgery with cross clamping of the aorta below the renal arteries. Barry (1960) recommended the prophylactic use of mannitol in all patients undergoing resectional treatment of abdominal aortic aneurysms.

Other suggested uses of mannitol included: 1) prevention of organic renal failure after transfusion reactions (Barry); 2) reduction of cerebral edema during neurosurgical procedures (Shenkin); 3) correction of hyponatremia in patients with serum dilution (Hammond); and 4) lowering intraocular pressure (Weiss).

Dose and Complications

Prophylactic administration of mannitol differs from therapeutic use in dosage, method of infusion and possible complications.

Moore suggests prophylactic dosages of 1000-2000cc of 10 per cent mannitol given over an extended period of time. Thus the patient is maintained on a low concentration of mannitol which encourages diuresis. Cheney (1964) has noted that the administration of 100 gram of mannitol in such manner has little or no effect on the serum sodium concentration.

Prolonged mannitol administration can be complicated by an elevation in serum sodium concentration. The excretion of urine with a high water to sodium ratio results in the relative hypernatremia. It is also evident that prolonged administration can theoretically deplete body water and result in a hypovolemic state.

Vacuolization of the renal tubular cells has been

associated with prolonged administration of mannitol. The significance of these lesions has not been determined but prolonged administration of mannitol (greater than 24 hours) is discouraged.

Therapeutic use, in the oliguric or anuric patient, is limited to loading doses over a short period of time. Eight to twenty grams of a 20 per cent solution in 5-20 minutes has been recommended. In cases of established renal failure, if the initial infusion of mannitol fails to induce a diuresis, a repeat dose may be given but with caution. Repeated infusions are discouraged. The failure of mannitol to incite a diuresis is indicative of renal inability to remove mannitol from the circulating blood volume. Thus the major route of mannitol excretion is blocked and the extracellular responses mentioned earlier are compounded.

Summary

Mannitol is a low molecular weight hexahydric alcohol with marked hygroscopic characteristics. It is almost completely eliminated by glomerular filtration with no reabsorption within the nephron.

A mannitol diuresis results from its hygroscopic characteristics within the proximal tubule combined with its effect on the countercurrent system by increasing renal blood flow.

The therapeutic effects of mannitol on ischemic kidneys threatened with a circulating pigment are well documented. Prophylactic utilization has been suggested in situations threatening renal ischemia.

The complications from use of mannitol are such that prophylactic use greater than 24 hours is discouraged as is repeated therapeutic "loading" doses without a diuretic response.

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MEDICAL ARTICLE

NATIONAL SURVEY OF BLOOD PRESSURE AND HEART DISEASES IN JAPAN

*Kiyoshi Imai, MD, Masato Takikawa, MD, Yukio Maeda, Masaaki Fukushima, MD, Hisashi Teramatsu, MD, and Yoshiaki Itonaga, MD.**

The leading causes of death in Japan changed greatly after World War II. Deaths from infectious diseases such as tuberculosis decreased drastically, and deaths attributed to chronic diseases such as vascular lesions affecting the central nervous system and heart diseases gradually increased. These diseases now head the list of causes and account for one-third of all mortality in Japan.¹ Therefore,

vascular lesions and heart diseases are of major concern to public health officials in Japan.

Clinicians and epidemiologists have conducted studies in Japan of vascular lesions affecting the central nervous system and heart diseases. The study populations, however, were generally small or were specially selected. Furthermore, the methods and techniques used differed from one study to another.

Therefore, in order to gauge the prevalence of these diseases in Japan by well-defined techniques, it was necessary for the National Ministry of Health

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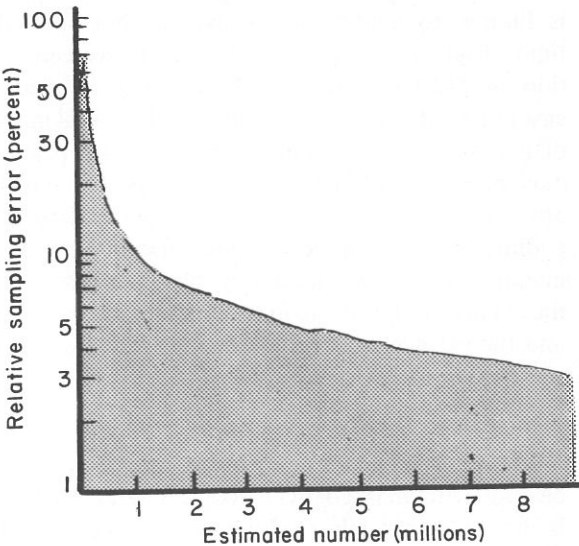
and Welfare to undertake a national survey. A special expert committee, consisting of clinicians and health administrators, was named to plan the survey and choose the standardized methods and techniques to be used. These were based on WHO recommendations² and others. The committee also instructed the technicians in these techniques and emphasized the importance of using uniform methods.

The results of the survey were outlined at the Japanese Public Health Assembly in 1963 in Yokohama. This paper deals with only a portion of the detailed data the survey yielded.

Survey Design

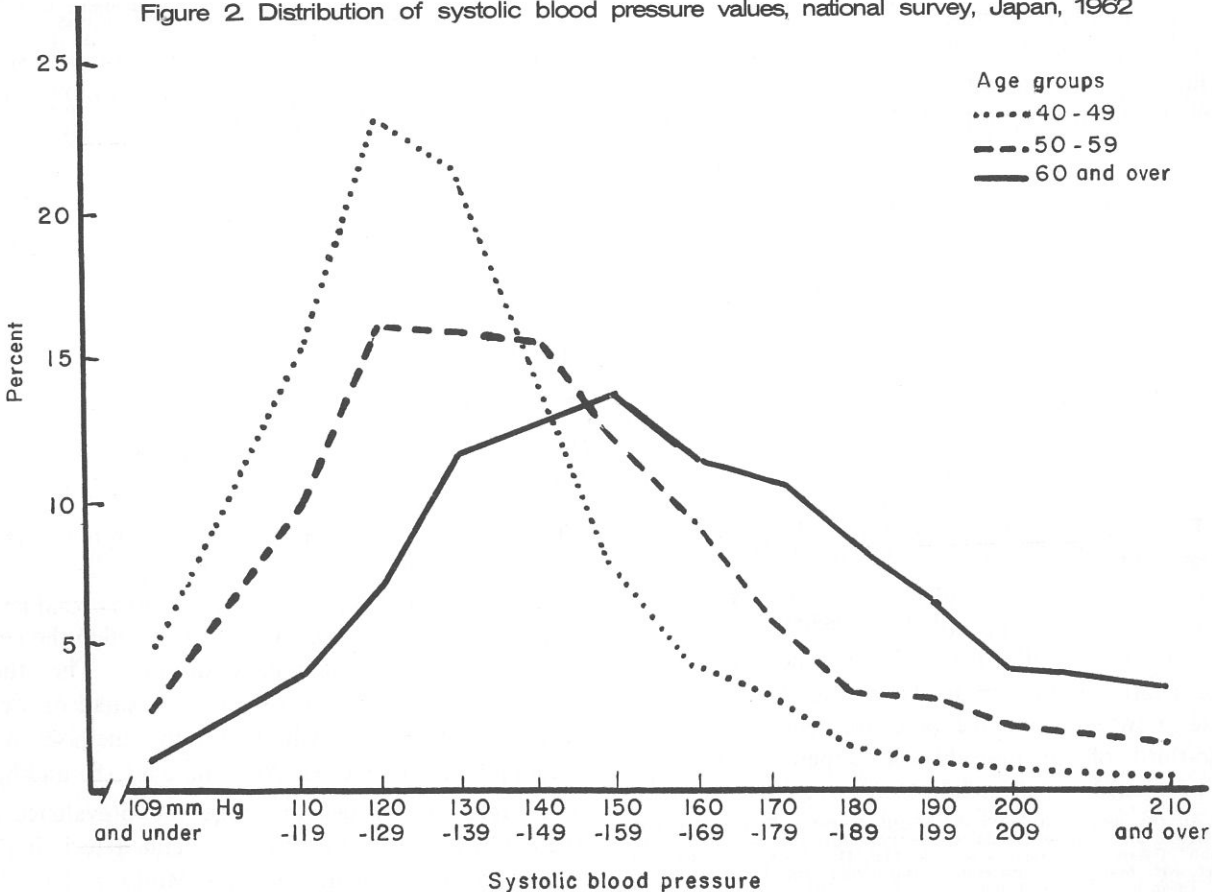
The survey was held at the end of October 1962 under the auspices of the Health Statistics Section, Ministry of Health and Welfare, the government of each prefecture, and prefectural medical associations. The chief and staff of district health centers in the survey sample conducted the survey in their areas. (Japan has about 800 district health centers operated by the 46 prefectural governments. Each has a staff of approximately 30 persons and serves about 100,000 persons or an area of 460 square kilometers.)

Figure 1. Approximate value of sampling error



For the survey, a sample of about 7,000 persons more than 40 years of age (1/4,000 of all Japanese over 40 years) was selected by stratified 2-stage

Figure 2. Distribution of systolic blood pressure values, national survey, Japan, 1962



sampling. In the first stage the 3,600 administrative units (city, ward, town, or village) in Japan were grouped into 38 strata by population size and district. One unit was chosen from each stratum with a probability proportional to size. In the second stage 114 census areas were selected at random from these 38 units. An average census area contains about 50 households and a population of 150 to 250. There are about 420,000 census areas in Japan.

The health centers notified persons in the sample that they had been selected for interview. Blood pressure measurements, electrocardiograms, urine protein tests (men only), auscultation, general inspection, and oral questioning of all respondents comprised the survey.

Before blood pressure was measured, all respondents rested for at least 5 minutes in a sitting position. Readings were taken on the right arm with the subjects in a sitting position, using a Riva-Rocci sphygmomanometer in the usual fashion. The point of disappearance of the sound was taken as the diastolic pressure. The room temperature was kept at over 59°F. In taking the electrocardiograms, the conventional 12 leads were used. In the urine protein test the sulfosalicylic acid method was used.

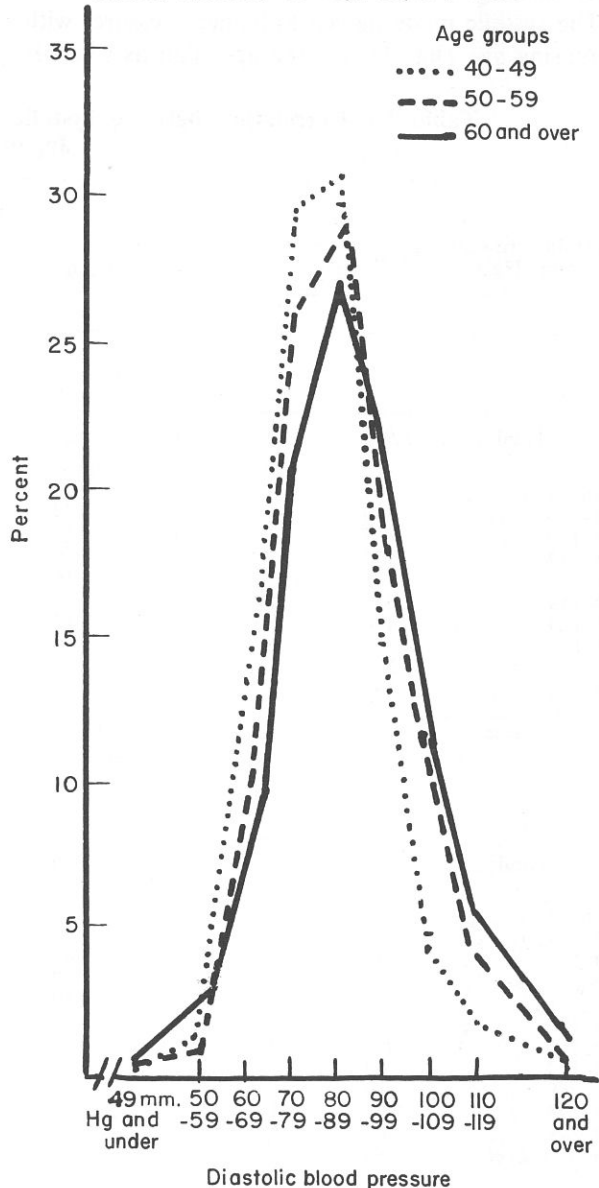
The examining physicians and nurses completed a record for each person examined. The name, sex, birth date, occupation, present diseases, and subjective symptoms were recorded, as well as findings from the general inspection, auscultation, electrocardiogram, and the urine protein test. The blood pressure and pulse rate were recorded, together with any evidence of edema and any diagnosis or treatment. A duplicate tracing of each electrocardiogram was prepared. The district health centers forwarded all records to the expert committee who reviewed them and carefully re-evaluated the electrocardiograms.

Results

Rate of response. A total of 5,912 persons were examined; the rate of response was 78.8 percent for the men and 86.1 percent for the women. The examined group was very similar in age composition to the estimated 1962 population of those over 40 years in Japan. Judging from their medical histories, the nonrespondents' were not characteristic of the general population.

Estimation and sampling error. Population values were estimated by the ratio method. If x denotes the number of persons examined who had a given characteristic and y the total number of respondents, the

Figure 3. Distribution of diastolic blood pressure values, national survey, Japan, 1962



estimated total population with the characteristic is obtained by the following formula:

$$X_r = \frac{x}{y} Y.$$

Y is 27,109,000, the 1962 population of those over 40 in Japan, a total supplied by the Statistics Bureau of Japan. Figure 1 shows the approximate value of the sampling error.

Blood pressure. The mean systolic and diastolic blood pressure increases with age. For the population over 40 years, the systolic means was 148.2 ± 28.3 mm. Hg. for males and 146.9 ± 30.3 mm. Hg.

for females. The mean value of diastolic blood pressure was 86.4 ± 15.7 mm. Hg. for men and 84.7 ± 15.2 mm. Hg. for women.

The systolic mode moved to higher pressures with increasing age (fig. 2); for the age span as a whole

it was in the interval 130-139 mm. Hg. for both men and women.^{3,4} A definition of hypertension is not yet decided for the Japanese population, but persons with systolic values of more than 150 mm. Hg. are considered to require medical attention.

Table 1.—Correlation between systolic and diastolic pressures, national survey, Japan, 1962

Systolic pressure (mm. Hg.)	Total	Diastolic pressure (mm. Hg.)								
		Under 50	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120 and over
Total										
Total-----	5,912	22	102	626	1,520	1,717	1,085	485	237	118
Under 110-----	254	5	33	110	87	19	-----	-----	-----	-----
110-119-----	592	5	28	184	293	77	4	1	-----	-----
120-129-----	937	4	18	153	400	327	33	2	-----	-----
130-139-----	977	3	12	89	349	405	112	7	-----	-----
140-149-----	833	-----	7	46	189	368	192	24	6	1
150-159-----	655	1	1	22	100	216	242	61	12	-----
160-169-----	490	1	1	12	47	138	195	69	22	5
170-179-----	379	2	1	6	33	66	131	97	38	5
180-189-----	263	-----	-----	-----	6	45	78	81	36	17
190-199-----	206	1	-----	-----	11	31	42	65	39	17
200-209-----	128	-----	1	3	1	16	23	41	32	11
210 and over----	198	-----	-----	1	4	9	33	37	52	62
Male										
Total-----	2,578	11	34	249	638	743	489	234	122	58
Under 110-----	100	3	9	36	41	11	-----	-----	-----	-----
110-119-----	235	2	7	68	120	36	2	-----	-----	-----
120-129-----	411	2	8	63	179	144	13	2	-----	-----
130-139-----	436	1	6	43	146	170	65	5	-----	-----
140-149-----	359	-----	3	19	69	163	89	13	3	-----
150-159-----	301	1	-----	12	39	97	109	35	8	-----
160-169-----	211	1	-----	3	21	53	82	36	12	3
170-179-----	164	-----	-----	4	13	25	55	42	22	3
180-189-----	119	-----	-----	-----	3	21	35	36	16	8
190-199-----	93	1	-----	-----	5	12	17	31	20	7
200-209-----	61	-----	1	-----	-----	7	10	22	18	3
210 and over----	88	-----	-----	1	2	4	12	12	23	34
Female										
Total-----	3,334	11	68	377	882	974	596	251	115	60
Under 110-----	154	2	24	74	46	8	-----	-----	-----	-----
110-119-----	357	3	21	116	173	41	2	1	-----	-----
120-129-----	526	2	10	90	221	183	20	-----	-----	-----
130-139-----	541	2	6	46	203	235	47	2	-----	-----
140-149-----	474	-----	4	27	120	205	103	11	3	1
150-159-----	354	-----	1	10	61	119	133	26	4	-----
160-169-----	279	-----	1	9	26	85	113	33	10	2
170-179-----	215	2	1	2	20	41	76	55	16	2
180-189-----	144	-----	-----	-----	3	24	43	45	20	9
190-199-----	113	-----	-----	-----	6	19	25	34	19	10
200-209-----	67	-----	-----	3	1	9	13	19	14	8
210 and over----	110	-----	-----	-----	2	5	21	25	29	28

NOTE: $r = + 0.700$.

Of the 5,912 persons in the study group, 39.2 percent had readings of more than 150 mm. Hg. systolic pressure. By age group, the percentage with such readings were 18.6 percent of those 40-49 years, 38.6 percent for the 50-59 year age group, and 63.1 percent of those 60 years and older.

The mode for diastolic blood pressure was in the interval 80-89 mm. Hg. for both men and women. The mode for diastolic pressure does not change with age as does the systolic mode (fig. 3). In Japan physicians consider diastolic readings above 90 mm. Hg. as hypertensive.

A total of 32.6 percent of those in the study group had diastolic readings above 90 mm. Hg.; by age

group, 22.7 percent of those 40-49 years, 34.2 percent of those 50-59 years, and 42.2 percent of those 60 years or older.

Correlation. The correlation coefficient (r) between the systolic and diastolic pressures was +0.700 and there were no sex differences. Table 1 reveals that 26.1 percent of the examinees had both a systolic reading above 150 mm. Hg. and a diastolic reading above 90 mm. Hg. with the percentages increasing with age. On the other hand, 54.3 percent of the group had both a systolic reading less than 150 mm. Hg. and a diastolic reading of less than 90 mm. Hg. and this percentage decreased with increasing age.

Table 2. Electrocardiographic screening results, national survey, Japan 1962

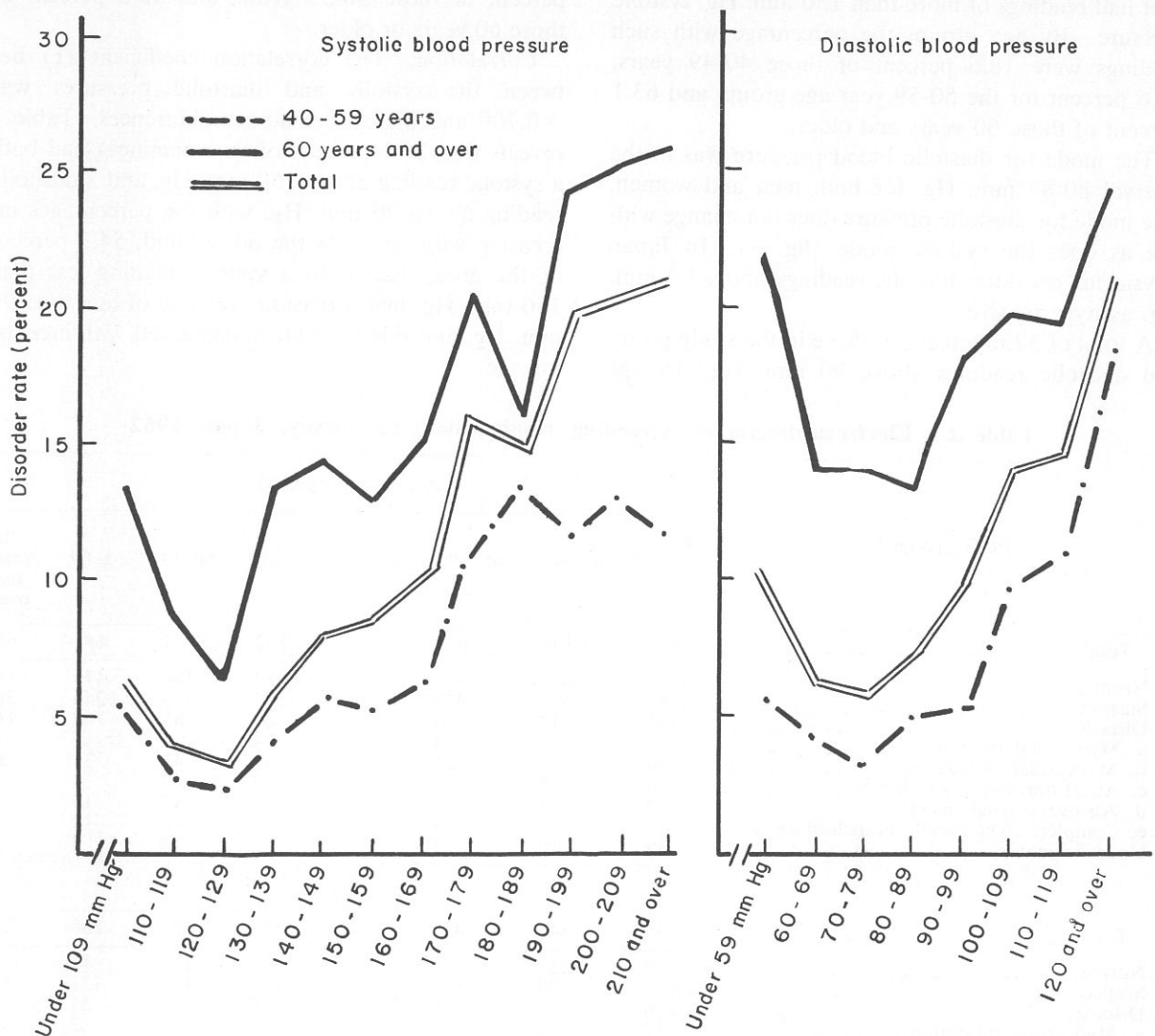
ECG groups ¹	Total	Age group (years)						
		40-44	45-49	50-54	55-59	60-64	65-69	70 years and over
Total	5,803	1,105	1,035	996	822	714	491	640
1. Normal	2,684	621	560	478	383	284	175	183
2. Suspect	2,587	427	432	466	377	335	246	304
3. Disorder	493	47	40	49	60	83	67	147
a. Myocardial infarction	31	2	4	1	4	5	5	10
b. Myocardial damage	250	22	25	32	35	41	33	62
c. Atrial fibrillation and flutter	36	2	2	1	3	9	4	15
d. Atrioventricular block	99	14	6	10	8	12	13	36
e. Complete right bundle branch-block	77	7	3	5	10	16	12	24
4. Undeterminable	39	10	3	3	2	12	3	6
Male								
Total	2,530	443	437	442	364	334	238	272
1. Normal	1,129	221	224	220	170	130	91	73
2. Suspect	1,167	198	194	202	168	152	121	132
3. Disorder	216	20	18	18	25	47	25	63
a. Myocardial infarction	17	2	2	1	3	4	2	3
b. Myocardial damage	75	4	8	9	9	19	10	16
c. Atrial fibrillation and flutter	20	-----	2	-----	2	4	2	10
d. Atrioventricular block	55	10	3	7	2	9	7	17
e. Complete right bundle branch-block	49	4	3	1	9	11	4	17
4. Undeterminable	18	4	1	2	1	5	1	4
Female								
Total	3,273	662	598	554	458	380	253	368
1. Normal	1,555	400	336	258	213	154	84	110
2. Suspect	1,420	229	238	264	209	183	125	172
3. Disorder	277	27	22	31	35	36	42	84
a. Myocardial infarction	14	-----	2	-----	1	1	3	7
b. Myocardial damage	175	18	17	23	26	22	23	46
c. Atrial fibrillation and flutter	16	2	-----	1	1	5	2	5
d. Atrioventricular block	44	4	3	3	6	3	6	19
e. Complete right bundle branch-block	28	3	-----	4	1	5	8	7
4. Undeterminable	21	6	2	1	1	7	2	2

¹ See text for complete definitions.

Urine protein test. For the test, which was given only to males, the rate of positives was 10.8 percent. Men with blood pressure readings above 150 mm.

Hg. had a higher positive rate, 15.8 percent, and there was a higher rate also (16.5 percent), for those with diastolic readings about 90 mm. Hg.

Figure 4. Relationship between ECG disorders rate and blood pressure values, national survey, Japan, 1962



Electrocardiographic findings. The special expert committee prepared a table based on the Minnesota Code for classifying electrocardiograms. The following four classes were set up:

1. Normal group.
2. Suspect group. High voltage, ST segment depression ≥ 0.05 to 0.1 millivolt, flat T, incomplete right bundle-branch block, PQ-interval prolongation, abnormal P, slight arrhythmia (occasional extra systole, tachycardia, bradycardia), and other (W-P-W, QT-interval prolongation, and so forth).
3. Disorder group.
 - a. Myocardial infarction
 - b. Myocardial damage (ST segment depression ≥ 0.1 millivolt, negative T), inverted T, or complete left bundle-branch block.

- c. Atrial fibrillation and flutter.
- d. Atrioventricular block or other prominent arrhythmia.
- e. Complete right bundle-branch block.
4. Undeterminable group.

Electrocardiograms were taken of 5,803 persons, with 46.3 percent of these classified as group 1, 44.6 percent as group 2, and 8.5 percent in the disorder category, group 3. No ECG's were taken on 109 persons.

The percentage of those in the normal group 1 decreased with increasing age, and group 2 (suspect) increased slightly with increasing age among both sexes (table 2). The proportions of those in group 3 (disorder) were about the same for men and

Table 3. Results of electrocardiograms by systolic pressure readings

ECG group ¹										
Systolic pressure (mm. Hg.)	Total	3								4
		1	2	Total						
				a	b	c	d	e		
Total										
Total -----	5,803	2,684	2,587	493	31	250	36	99	77	39
Under 110-----	252	151	82	16	1	10	2	3	-----	3
110-119-----	587	380	183	22	1	9	6	5	1	2
120-129-----	927	530	361	29	2	8	2	10	7	7
130-139-----	960	525	373	57	4	20	7	15	11	5
140-149-----	814	395	350	64	4	30	2	19	9	5
150-159-----	639	274	309	53	4	26	2	6	15	3
160-169-----	483	175	254	49	2	27	4	5	11	5
170-179-----	367	100	205	59	5	29	5	15	5	3
180-189-----	254	62	153	38	2	19	2	9	6	1
190-199-----	203	52	109	40	1	26	1	7	5	2
200-209-----	123	22	74	25	1	16	1	4	3	2
210 and over-----	194	18	134	41	4	30	2	1	4	1
Male										
Total -----	2,530	1,129	1,167	216	17	75	20	55	49	18
Under 110-----	99	57	35	7	1	3	1	2	-----	-----
110-119-----	232	144	80	8	1	-----	4	2	1	-----
120-129-----	407	232	156	15	1	2	1	8	3	4
130-139-----	431	226	174	27	2	5	3	10	7	4
140-149-----	349	156	167	23	1	5	1	10	6	3
150-159-----	295	131	137	26	2	10	1	2	11	1
160-169-----	206	79	104	21	1	7	2	3	8	2
170-179-----	157	40	94	21	2	8	2	6	3	2
180-189-----	117	28	70	18	1	8	1	4	4	1
190-199-----	92	23	52	17	-----	9	1	5	2	-----
200-209-----	58	7	40	10	1	3	1	3	2	1
210 and over-----	87	6	58	23	4	15	2	-----	2	-----
Female										
Total -----	3,273	1,555	1,420	277	14	175	16	44	28	21
Under 110-----	153	94	47	9	-----	7	1	1	-----	3
110-119-----	355	236	103	14	-----	9	2	3	-----	2
120-129-----	520	298	205	14	1	6	1	2	4	3
130-139-----	529	299	199	30	2	15	4	5	4	1
140-149-----	465	239	183	41	3	25	1	9	3	2
150-159-----	344	143	172	27	2	16	1	4	4	2
160-169-----	277	96	150	28	1	20	2	2	3	3
170-179-----	210	60	111	38	3	21	3	9	2	1
180-189-----	137	34	83	20	1	11	1	5	2	-----
190-199-----	111	29	57	23	1	17	-----	2	3	2
200-209-----	65	15	34	15	-----	13	-----	1	1	1
210 and over-----	107	12	76	18	-----	15	-----	1	2	1

¹ See text for definitions of groups.

women. At 40-49 years, 4.1 percent were in this group; at 50-59 years, 6.0 percent; and at 60 years or older, 16.1 percent.

Relation between ECG and blood pressure. The lowest rate of ECG disorders occurred at the 120-

129 mm. Hg. systolic blood pressure level and at the 70-79 mm. Hg. diastolic pressure level (fig. 4, tables 3 and 4). The rate of disorders rose as blood pressure level increased, but the rate of disorders was also higher at very low blood pressure levels. This

Table 4. Correlation of electrocardiograms by diastolic pressure readings

		ECG group ¹								
Diastolic pressure (mm. Hg.)	Total	1	2	3					4	
				Total	a	b	c	d		e
Total										
Total -----	5,803	2,684	2,587	493	31	250	36	99	77	39
Under 50-----	21	9	9	3	2	1	1	1	1	1
50-59-----	101	53	38	9	5	1	1	1	1	1
60-69-----	620	343	231	40	2	17	2	10	9	6
70-79-----	1,498	820	578	88	6	30	9	28	15	12
80-89-----	1,691	843	715	125	5	64	11	27	18	8
90-99-----	1,063	422	531	106	4	59	4	23	16	4
100-109-----	472	131	269	66	8	34	7	4	13	6
110-119-----	227	48	145	33	3	22	1	4	3	1
120 and over-----	110	15	71	23	2	17	1	1	2	1
Male										
Total -----	2,530	1,129	1,167	216	17	75	20	55	49	18
Under 50-----	11	6	3	2	2	1	1	1	1	1
50-59-----	33	16	15	1	1	1	1	1	1	1
60-69-----	245	119	101	22	1	7	1	7	6	3
70-79-----	628	338	246	38	2	8	3	15	10	6
80-89-----	735	355	326	51	3	15	7	14	12	3
90-99-----	480	198	235	45	2	15	4	15	9	2
100-109-----	227	65	130	31	5	13	4	9	9	1
110-119-----	118	28	73	16	2	9	3	3	2	1
120 and over-----	53	4	38	10	2	5	1	1	1	1
Female										
Total -----	3,273	1,555	1,420	277	14	175	16	44	28	21
Under 50-----	10	3	6	1	1	1	1	1	1	1
50-59-----	68	37	23	8	1	4	1	1	1	1
60-69-----	375	224	130	18	1	10	1	3	3	3
70-79-----	870	482	332	50	4	22	6	13	5	6
80-89-----	956	488	389	74	2	49	4	13	6	5
90-99-----	583	224	296	61	2	44	8	8	7	2
100-109-----	245	66	139	35	3	21	3	4	4	5
110-119-----	109	20	72	17	1	13	1	1	1	1
120 and over-----	57	11	33	13	1	12	1	1	1	1

¹See text for definitions of groups.

yielded a J-shaped curve both for the age group 40-59 years and 60 years and over. For subgroup 3b the trend of prevalence with increasing blood pressure was steeper than in the other subgroups (a, c, d, and e).

Summary

To investigate blood pressure and heart diseases, the Ministry of Health and Welfare of Japan undertook a survey of about 7,000 persons more than 40

years of age. The group was a national sample selected by a stratified two-stage sampling. Data were obtained from 82.8 percent of the sample through examinations, including blood pressure measurement, ECG's, general auscultation, inspection, and urine protein test for all males as well as a medical history. For each sex the age composition of the respondent group duplicated that of the general population of Japan. A special expert committee standardized the examination methods and techniques

and instructed the technicians conducting the survey. Staff of the district health centers conducted the survey at the end of October 1962 under the auspices of the Ministry of Health and Welfare, each prefecture and prefectural medical association.

Readings of more than both 150 mm. Hg. in systolic blood pressure and 90 mm. Hg. of diastolic pressure were registered by 26.1 percent of the entire sample, with the percentages being greater in older age groups than in younger. Projected to the entire population of Japan, about 7,070,000 persons would have such readings.

The mean for the systolic blood pressure was 148.2 ± 28.3 mm. Hg. for men and 146.9 ± 30.3 mm. Hg. for women; there was no major difference by sex. The mean for the diastolic pressure readings was 86.4 ± 15.7 mm. Hg. for men and 84.7 ± 15.2 mm. Hg. for women, and again there was no sex difference. The mean and the spread of values increased with age in both sexes and in both systolic and diastolic pressures.

The correlation coefficient between systolic and diastolic pressures was $+0.700$, and there were no differences by sex.

Results of the urine protein test showed that 15.8 percent of men with systolic pressures over 150 mm. Hg. had positive test results, as contrasted with 5.3 percent at pressures under 150 mm. Hg. A similar relationship was found in diastolic pressures; 16.5 percent of men with diastolic pressures above 90 mm. Hg. had positive test results, in contrast to 5.8 percent with pressures under 90 mm. Hg.

Electrocardiographic disorders were found in 8.5 percent of the sample. There were no sex differences. The rate increased with age for both males and females. Projection to the population of Japan would indicate that about 2.3 million persons have such disorders. The lowest rate in ECG disorders occurred at the 120-129 mm. Hg. systolic level and the 70-79 mm. Hg. level for diastolic readings for all ages and both sexes.

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HYPERBARIC OXYGEN TREATMENT USED ON PATIENT WITH GAS GANGRENE

In an excellent demonstration of the marshalling of available facilities in an emergency and a practical display of collaboration in clinical practice, the patient, an officer in the Venezuelan Navy, with LCDR Morris Skinner MC USN, of the Orthopedic Department of the U.S. Naval Hospital, NNMHC, emerged from the high pressure facility at the Diving Section of the Naval Medical Research Institute after a five-hour treatment for gas gangrene which developed subsequent to a traumatic injury of the left leg suffered by the patient aboard his ship in the Atlantic Ocean three days before.

This was the first time that the pressure facility at NMRI has been used for treatment of gas gangrene, although the use of hyperbaric oxygen for treatment of infections, trauma, and other conditions in which the oxygen supply to tissues is inadequate, has become popular. The results of treatment of gas gangrene by hyperbaric oxygen provides the most dramatic therapeutic results of any condition treated by hyperbaric oxygen.

The patient was flown from Bermuda to the Naval Hospital where necessary surgery was performed. He was then placed in the high pressure facility of the Diving Section of NMRI. Dr. Skinner had previous experience in the use of a high pressure chamber for therapeutic purposes while assigned to the Dispensary at the U.S. Naval Base, Long Beach, Calif. During this five-hour treatment period, Dr. Skinner stayed with the patient in the pressure chamber and administered a transfusion and intravenous fluids as necessary.

The marked improvement of the patient could be attributed to the hyperbaric oxygen therapy in that the patient appeared moribund when taken into the chamber and five-hours later had recovered to the extent that he was interested in his surroundings and requested a cigarette when he was taken to the ambulance for transportation back to the hospital. At present, the patient is reported to be in very satisfactory condition in the Naval Hospital.



LCDR Morris Skinner MC USN, of the Orthopedic Department of the U.S. Naval Hospital, NNMC, spent the five-hour treatment period in the high pressure facility at the Diving School of NMRI with the patient.

BLOOD PUMPED THROUGH LIVER OF PIG

Boston, June 15. A 34-year-old Boston woman, whose blood was pumped thru the liver of a pig in a desperate attempt to save her life, was reported in "much improved condition" yesterday at Boston City Hospital.

Hospital officials said the woman, whose name was withheld, underwent the treatment for more than five and a half hours Sunday when she was found to be near death from an acutely diseased liver.

A team of 12 doctors connected a pig's liver to her circulatory system. They hope to keep the woman alive until her liver resumes normal functioning.

Pioneering studies in the liver perfusion procedure have been made at Boston City Hospital and in Kentucky by Dr. Ben Eisman and in San Francisco by Dr. William Silem.

It is believed that no more than half a dozen patients have been treated in this manner. Several of the patients reportedly lived as long as two weeks, but none of them recovered.

Dr. Eisman has recently collected eight feature articles on "What's New in the Treatment of the Injured", which were published in the U.S. Navy Medical News Letter.

FROM THE NOTE BOOK

DIDREX

Benzphetamine (Didrex-Upjohn), a sympathomimetic drug and an analogue of amphetamine, is currently promoted as an anorectic agent which brings about "prompt and persistent weight loss," is "effective even in chronic refractory obesity," and has "minimal side effects . . . no false energy."

It seems fairly well established that sympathomimetic drugs may assist temporarily in some weight-reduction programs. Whether they do so entirely by diminishing appetite or partly by relieving the depression that often predisposes to overeating is uncertain. Whatever the mechanism of action, the pharmacologic effects are temporary, seldom lasting more than several weeks; tolerance soon develops and, occasionally, dependence is acquired.

There is no acceptable evidence that benzphetamine is superior to any other sympathomimetic agent currently used in weight-reducing programs. All the typical toxic and side effects, including central-nervous-system stimulation, occur with benzphetamine at required dosage levels.

Clinical Trials. In some uncontrolled studies, benzphetamine has been found superior to other congeners of the amphetamines, but a review of all the studies, including the few controlled trials, indicates that this drug offers no advantage either in therapeutic or side effects over appropriate doses of amphetamine or its other congeners.

In a controlled trial (N Patel et al., *Clin Pharmacol Ther*, 4:330, 1963) comparing benzphetamine with phenmetrazine (Preludin-Geigy), dextroamphetamine and a placebo, in doses of 50 mg, 25 mg and 5 mg, respectively, three times a day over a period of eight weeks, there were no significant differences in weight loss or appetite suppression in patients receiving the three drugs. There was no doubt that the drugs had a more sustained anorectic effect than the placebos.

As for side effects, the Patel study indicated that "None of the agents used produced clinically important alterations in the blood pressure, pulse or respi-

ration. Insomnia, dryness of the mouth, and indigestion were reported with all three active agents . . . to a lesser extent in the placebo group. Insomnia became less troublesome as the study progressed, although several subjects receiving benzphetamine reported some problem with sleep throughout the study . . . Mood elevation was noted by some of those getting (the three drugs)."

Conclusion. The prognosis for sustained weight reduction in truly obese persons is generally poor. For some of these patients, aggressive weight reduction measures pose a serious threat to emotional stability. For less marked degrees of overweight, diet restriction alone may be effective, but some patients find an anorectic agent temporarily helpful in maintaining a restricted diet during the development of proper eating habits. None of the amphetamine-type drugs offers unique advantages over the others. Because of the tendency of these drugs to cause physical dependence, they should not be used by persons with unstable personality or with a history of dependence on other drugs or on alcohol.

NEW CENTER FOR EPILEPSY VICTIMS

A new project in the Southwest to provide medical treatment, training, and employment for persons who suffer from epilepsy was announced today by the U.S. Department of Health, Education, and Welfare.

The project will be carried out by the Barrow Neurological Institute in Phoenix, Arizona, with a first-year grant of \$64,474 from the Department's Vocational Rehabilitation Administration. It is anticipated that \$130,000 will be needed for future requirements.

The Institute will provide a special regional center for epilepsy victims, with diagnostic and treatment facilities for both residential patients and out-patients. It will serve about 50 patients from the State of Arizona during the first year and will subsequently accept patients from other States in the Southwest.

A vocational assessment unit will be established in the center to appraise the job potential of patients

and to provide initial training courses. Referrals for longer-term training will be arranged with established workshops in Phoenix such as Epi-Hab and Goodwill.

The objective is for patients to move from workshop employment into internships in private industries in the community and, finally, into regular permanent jobs.

The Institute plans to enlist community support for the project through the establishment of a rehabilitation council consisting of employers, union leaders, and representatives of social and government agencies and citizens' groups.

Miss Mary E. Switzer, Commissioner of Vocational Rehabilitation, said that "misconceptions about epilepsy have too often prevented persons from obtaining jobs which they are fully capable of performing. One of the important objectives of the project and of the proposed rehabilitation council will be to work toward the removal of job restrictions which prevent the effective use of properly retrained epilepsy victims in business and industry."

The new project will expand the services currently being offered at the Barrow Institute through a convulsive disorder unit already established under a Neurological and Sensory Disease grant from the Public Health Service of the Department of Health, Education, and Welfare. That unit provides medical evaluation and diagnostic services for epilepsy patients in the area and serves as a training center for physicians, medical students, social workers, nurses, school teachers, and motor vehicle licensing officials in the Southwest who are concerned with persons suffering from convulsive disorders. The new project will enable the Institute to provide medical treatment and vocational rehabilitation in addition to the diagnostic and training services presently available.

ADMIRAL HOGAN RECOGNIZED FOR HIS EXTRAORDINARY ACCOMPLISHMENT

Rear Admiral B. W. Hogan MC USN (Ret), the 22nd Surgeon General of the Navy, was recognized for his extraordinary accomplishment in Dallas, June 24-27. The American Academy of Achievement invited him to its fourth annual "Salute to Excellence" weekend as the guest of honor "representative of the many who excel" in neuropsychiatry.

Dr. Hogan joined 50 National Captains of Achievement in the spotlight at the Banquet of the Golden Plate, Saturday evening June 26, in the grand

ballroom of the Sheraton Dallas Hotel. There he was presented the Golden Plate Award for outstanding contributions to the American way of life. The candle-lit- black-tie affair was attended by several hundred Citizens of Achievement who are civic, business, cultural, and student leaders from Dallas and the Southwest.

VADM SEMMES SPEAKS AT HOSPITAL ADMINISTRATION GRADUATION

Vice Admiral B. J. Semmes, Jr., Chief of Naval Personnel, delivered the address at graduation ceremonies of the Twenty-Sixth Class in Hospital Administration on 11 June 1965. Thirty-five Medical Service Corps officers graduated from the ten-month course.

Rear Admiral Robert B. Brown, Surgeon General, presented the Surgeon General's Award for Scholastic Achievement to LT Robert K. Zentmyer MSC USN. This award consisted of a certificate and a plaque.

During the intensive ten-month course students satisfactorily meeting the academic requirements of NSHA and The George Washington University were granted academic credits by the University toward a Bachelor in Arts degree. The School has been an Off-Campus Center of the University since 1960.

NNMC Commanding Officer, Rear Admiral C. L. Andrews presented the graduation certificates, and Captain R. S. Herrmann, Chief, Medical Service Corps, delivered the Class Charge.

A total of 1,066 students have graduated from NSHA since its establishment on July 4, 1942. This total includes Army, Air Force, and Allied foreign officers in addition to Navy Medical Service Corps officers. Captain E. L. Van Landingham, Jr. MSC USN, is the commanding officer.

The graduates are, Lieutenants: J. E. Kemp, E. R. Keller, J. E. DeWitt, T. A. Hussey, J. E. Corder, M. L. Martin, R. F. McCullagh, J. J. Steil, F. M. Richardson, J. L. Graves, G. L. Hammett, D. L. Bagnall, R. L. Wentworth, C. W. Lawson, G. D. Despiegler, A. H. Lovin, J. R. Ruppe, V. W. Hagstrom, A. E. McConnell Jr, J. L. Dupes, E. E. Rovario, W. R. Conley, R. K. Zentmyer, R. F. Cox, R. N. Prelosky, A. G. Ebert, R. C. Hempey, and H. B. Price.

Lieutenants Junior Grade: J. D. Gillentine, M. R. Corbett, N. K. Owens, F. E. Bennett, C. L. Carnahan, A. R. Duncan, and W. C. Parrish.

TETRACYCLINE

Nephrotoxicity Of Deteriorated Drug

The nephrotoxicity of outdated or deteriorated tetracycline antibiotics has been previously noted. (See Clin-Alert No. 107, 1963). Glycosuria, aminoaciduria, phosphaturia, proteinuria, and acidosis are commonly encountered in patients with this syndrome. The two additional cases reported herein showed, in addition to previously noted abnormalities, pronounced potassium depletion.

Case I: The sister-in-law of a physician took outdated tetracycline for relief of recurrent cystitis. Weakness and lethargy were noted several days after institution of treatment. Symptoms increased in severity and the patient was hospitalized. Laboratory studies showed the serum potassium to be 2.3 mEq/L. Renal biopsy obtained one week after hospitalization showed striking vacuolization of the distal tubular epithelium. A second biopsy, performed one week later, showed hypercellularity of the

glomerular tufts with prominent capillary loops and basement-membrane thickening. The patient responded to supportive measures, including supplementary potassium therapy.

Case II: The 26-year-old wife of a physician took "old" tetracycline for a "viral syndrome." Symptoms, including marked muscular weakness, developed within a few days. The serum potassium was 3 mEq/L. Oral potassium therapy for 10 weeks brought about improvement but symptoms (weakness, polyuria and polydipsia) recurred when potassium was discontinued. Potassium therapy was resumed and symptoms again disappeared. During the next six months, several further attempts to withdraw potassium treatment caused the same symptoms to recur. One year after onset of the illness the patient still required supplementary potassium therapy. Fulop & Drapkin (Bronx, N. Y.), New England J M 272: 986, May 13, 1965.—Republished from CLIN-ALERT®, No. 147, May 26, 1965, by permission of Science Editors, Inc.

DENTAL SECTION

INFLUENCE OF DIABETES MELLITUS ON THE SEVERITY OF PERIODONTAL DISEASE

Belting, C. M. Hiniker, J. J., and Dummett, C. O., Jour Periodont 35:26-30, Nov-Dec 1964

The relationship of diabetes mellitus to the etiology of periodontal disease has been suggested repeatedly in the literature, but there is little unanimity of opinion regarding the nature of this relationship.

The purpose of the present study was to confirm or deny on an epidemiologic basis the validity of the hypothesis that diabetes mellitus predisposes to the development of periodontal disease and to examine the nature of any associations found to exist.

Using the Russell Index the periodontal status of 78 hospitalized patients having diabetes mellitus was compared with 79 other hospitalized patients not having diabetes. It was found that:

1. The severity of periodontal disease was significantly greater among the diabetic group of patients. Significant differences in severity persisted even when such variable factors as degree of calculus, age, and brushing frequency were held fixed in the two groups.

2. As the degree of calculus increased, the severity of periodontal disease increased significantly in both groups of patients.

3. As age increased, the severity of periodontal disease increased significantly in both groups of patients.

4. As brushing frequency increased, the severity of periodontal disease decreased in both groups of patients, although the decrease was not statistically significant.

5. The habit of bruxism and clenching was not related to the severity of periodontal disease in either group of patients.

6. As the degree of diabetes increased the severity of periodontal disease decreased significantly due to the younger age of the more severe diabetic patients, i.e., age played a more important role in severity of periodontal disease than degree of diabetes.

It was concluded that the increased severity of periodontal disease found among diabetic patients is another manifestation of the peripheral vascular occlusive disorders associated with diabetes mellitus. (Submitted by: CAPT J. R. Conant DC USN, U.S. Naval Station, Newport, Rhode Island.)

A MODIFIED TECHNIQUE FOR THE PLACEMENT OF CIRCUM-ZYGOMATIC WIRES

Edwards, J. B., *Brit Jour Oral Surg* (2):205-211,
1965

The author presents a modified technique for atraumatic placement of circum-zygomatic fixation wires, aseptically and without need for a facial incision. Required are four six-inch-long 15 gage stainless steel hypodermic needles with their hubs removed, and a pin vise which serves as a removable handle. At the area above the zygomatic arch, posterior and lateral to the outer canthus of the eye, where the zygomatic arch and lateral orbital rim meet, the needle is inserted to contact the superior edge of the bony arch. The needle is then directed medially to the arch, with the axis at an anterior angle, to enter the mouth high in the buccal fold in the first molar area. A wire is passed through the needle. The needle is withdrawn and discarded, leaving the wire in position.

A second needle, (slightly curved), inserted into the same facial hole, is passed to the arch, externally to the arch and into the mouth near the first wire. The external end of the wire is drawn through the needle. The needle is withdrawn orally. When the wire is drawn tight, it remains looped around the zygomatic arch, leaving only a small facial puncture wound, and ready for use in fracture fixation.

Similar techniques useful for circummandibular wires or for passing a wire from the infra-orbital or lateral rim are described.

(Submitted by: CDR Howard S. Kramer, Jr., DC USN, U.S. Naval Hospital, Chelsea, Mass.)

DIFFERENTIAL DIAGNOSIS OF PULP CONDITIONS

Seltzer, S., Bender, I. B., and Nazimov, H. *Oral Surg, Oral Med and Oral Path* 19(3): 383-391,
March 1965.

Both the general practitioner and the endodontist have difficulty in attempting to evaluate the histologic

status of the dental pulp on the basis of clinical data. A clinical classification based on subjective symptoms, past dental history, and objective findings is presented. Such a classification should permit the placing of involved teeth into one of two categories—treatable or nontreatable. *Treatable* refers to treatment of the pulp with a view toward its conservation while *nontreatable* teeth are those whose pulps would require endodontic treatment or extraction.

Teeth with pulps in the categories designated histologically as "intact-uninflamed pulp", "transitional stage", "atrophic pulp", "acute pulpitis", and "chronic partial pulpitis without necrosis" have a reasonable chance for resolution with conservative treatment (treatable). Teeth designated histologically as "chronic partial pulpitis with partial necrosis", "chronic total pulpitis", and "total pulp necrosis" require endodontic treatment or extraction (nontreatable).

Information that can be utilized to help make a judgment as to whether the pulp is *treatable* or *nontreatable* includes the following: intensity, duration, and previous history of odontalgia; presence of dental caries with and without pulp exposure, restorations, swelling, and/or periodontal disease; roentgenographic findings; results of thermal, percussion, palpation, anesthetic, and electric pulp tests; test drilling; and regions of referred pain.

Clinical signs and symptoms and clinical tests are correlated with histologic diagnosis and summarized in two tables. Another table shows the relationship of subjective symptoms and objective findings with the type of treatment probably indicated.

The authors point out that in spite of all efforts, the final diagnosis might still be clouded in doubt. Under these circumstances, watchful waiting is preferable to a misdiagnosis.

(Submitted by: CDR W. B. Gregory, Jr., DC USN, U.S. Naval Academy, Annapolis, Maryland.)

PERSONNEL AND PROFESSIONAL NOTES

COMPREHENSIVE DENTAL CARE

CAPT F. B. Rhobotham, DC USN, Head, Dependents Dental Service Department of U.S. Naval Dental Clinic, Yokosuka, Japan is maintaining a

program of comprehensive oral rehabilitation utilizing the hospital Operating Room.

The vast majority of cases involve pre-school age children combining rampant caries with a pressing

need for oral surgery. A large percentage of patients are of Japanese and Philippine origin, thus a communication barrier exists to further complicate routine dental treatment. Conventional operative procedures even with pre-medication are often frustrating and unproductive.

Approximately two years ago, this problem was discussed with CAPT D. E. Cooksey, DC USN, Commanding Officer, U.S. Naval Dental Clinic, Yokosuka. The use of the Naval Hospital Operating Room with general anesthesia was suggested in an effort to provide this type dental care to the dependents requiring it.

Through the joint efforts of the medical and dental staff at the Naval Hospital the following treatment plan was made possible:

A typical patient is admitted at noon the day prior to definitive treatment and given a routine laboratory, physical, and roentgenographic examination. The anesthesiology department schedules the case for the next morning. Under intubation general anesthesia all essential operative procedures are accomplished in the first phase. The second phase includes the preventive dentistry treatment, which involves the use of a compatible SnF_2 paste prophylaxis followed by a 10% topical SnF_2 application. The final phase is the removal of un-salvagable teeth, by CAPT W. A. Nelson, Head Oral Surgery Department, U.S. Naval Dental Clinic, Yokosuka. The patient is returned to the ward and is usually released to home care in midafternoon. Prior to discharge, the parents are instructed in the maintenance of good oral hygiene, daily use of a SnF_2 containing dentifrice, and the importance of a balanced nutritious diet. Finally, the patient is enrolled in a program utilizing the daily sodium fluoride supplement tablets. This requires parental cooperation and supervision in an attempt to reduce future caries susceptibility via the systemic approach.

During the six-month period, ending 31 March 1965, a total of sixteen patients were treated in this manner. In all 147 operative procedures and 31 oral surgery procedures were accomplished, in addition to the preventive techniques. Throughout this program LCDR J. D. Lee, MC USN, Chief of Anesthesiology and his staff have consistently provided invaluable support before, during, and after each admission. Without the cooperation and assistance of the anesthesia staff, treatment of this type would not be practical.

FLUORIDATION IN AREAS LACKING CENTRAL WATER SUPPLY

Significant reductions in tooth decay have been achieved by adding fluoride to school drinking water in a community lacking a central water supply system, the Public Health Service, U.S. Department of Health, Education, and Welfare, announced.

Assistant Surgeon General Donald J. Galagan, Chief of the PHS Division of Dental Public Health and Resources, called this "an important step in efforts to combat tooth decay among children in rural areas."

Elementary school children whose school drinking water was fluoridated showed 22 percent fewer decayed permanent teeth than children in the same area whose school water was not fluoridated.

The study was conducted in St. Thomas, Virgin Islands. Similar Public Health Service studies are underway in Kentucky and Pennsylvania.

Dr. Galagan said that the cost of fluoridating school water is minimal. He also noted that the method does not require dental personnel who, in the absence of fluoridated water, are needed to apply preventive fluoride treatments to children's teeth. This is an important factor in isolated rural areas which have few or no dentists or which have economic levels so low as to make dental care prohibitively expensive, he said.

Fluorides have been added to the water supply of an elementary school in St. Thomas since 1954. Because the children had been drinking fluoride-deficient water during their first five years of life and because they would be drinking fluoridated water on a part-time basis—only when at school—a fluoride concentration of 2.3 parts per million was used, slightly over three times the optimum fluoridation level for community water supplies in that temperature zone.

The study is reported in an article in the May issue of *Public Health Reports* by Dr. Herschel S. Horowitz, Chief of the Research and Development Section of the Division of Dental Public Health and Resources, and two co-investigators, Dr. Frank E. Law and Theodore Pritzker.

The article notes that 44 million Americans—23 percent of the U.S. population—live in areas without central water supply systems.

REPORT OF 1965 ANNUAL MEETING OF AMERICAN ASSOCIATION OF ENDODONTISTS

The twenty-second annual meeting of the American Association of Endodontists was held in Detroit, Michigan, from 29 April to 2 May, 1965.

The first examination was given during this period to applicants for certification by the American Board of Endodontics. A second examination was given later in May. A total of thirteen Naval Dental Officers participated in the two examinations.

Many naval dental officers attended the meeting. Several had an active part in the planning phases and conduct of the meeting.

During the meeting CAPT Warren J. Hedman, DC USN was elected to serve a three year term on the Executive Committee of the A.A.E. He served as Chairman of the Ethics Committee and has been appointed for another year in this post.

As an outgrowth of his activities on the Research Committee, CAPT C. E. Rudolph, Jr., DC USN was appointed Co-chairman of the Sub-committee on Consultation with Manufacturers for the coming year.

CAPT John F. Bucher, DC USN was elected to serve as the new Secretary of the A.A.E. and, in this capacity, will serve also as a member of the Executive Committee.

CDR Marvin H. Scott, DC USN represented the Navy Dental Corps as an essayist on the program. His essay entitled, "Artifistulation" was very well received by the membership.

CDR E. C. Penick, DC USN was complimented for his work on the Visual Education and Scientific Exhibits Committee.

CDR Worth B. Gregory, DC USN served successfully in the past year as Chairman of the Commercial Exhibits Committee and has been reappointed to this post for the succeeding year.

In summary, the 1965 annual meeting in Detroit was a highly successful and significant one. The program was marked by the very high caliber of essay and panel presentations by distinguished authorities in the specialty of endodontics.

The next annual meeting of the American Association of Endodontists will be held in San Francisco, April 14 through 17, 1966.

Inquiries concerning the activities of and prospective membership in the association may be directed to CAPT John F. Bucher, DC USN, U.S. Naval Dental School, National Naval Medical Center, Bethesda, Maryland 20014.

ORIENTATION VISIT OF DOCTOR HANS-OTTO ALDUS TO U.S. DENTAL AND MEDICAL FACILITIES

CDR Hans-Otto Aldus of the Federal German Navy has completed a two-week orientation tour of mil-

itary installations in this country. Doctor Aldus is the Chief and Dental Specialist of the Naval Medical Command of the Federal German Navy. The schedule and arrangements were made by the Dental Division of the Navy's Bureau of Medicine and Surgery.

Doctor Aldus first entered the service in 1938 as an aviator and studied dentistry after his release in 1946. He was commissioned a Lieutenant, Medical Corps, in 1958 when dental care became a part of the General Medical Service of the Federal Armed Forces of Germany.

The orientation included medical and dental facilities at the Navy Bureau of Medicine and Surgery, the Air Force Dental Staff, the Armed Forces Institute of Pathology in Washington, D.C.; the Naval Dental School and Naval Medical Research Institute, Bethesda, Maryland; and the Dental Departments at the U.S. Naval Academy and the Quantico Marine Corps Base. He visited at the Naval Dental Clinic, Norfolk, and at the dental facilities of the Great Lakes Naval Training Center. In New York, he toured the Defense Medical Supply Center.

DENTAL OFFICER PRESENTATIONS

LCDR A. D. Sanderson DC USN, U.S. Naval Dispensary, Washington, D.C., presented an illustrated talk entitled, Comparison of Hand Instrument and Ultrasonic Curettage: A Histologic Investigation, before the Greater Washington Society of Periodontology on 10 May 1965 in Washington, D. C.

CAPT J. J. Hilt DC USN, Dental Officer, U.S. Naval Air Station, Lemoore, California, hosted a clinical program for members of the Tulare-King Counties Dental Society on 17 May 1965. In addition to a demonstration of Casualty Care procedures by LCDR R. M. Romaniello and LT J. T. Peterson, the following dental officers presented tables clinics as indicated: CDR W. H. Mann DC USN—Fixed Partial Prosthesis, LCDR O. L. Shoemaker DC USN—Partial Denture Prosthesis, LT B. M. Sharp DC USN—Endodontic Technique, and LT A. S. Schrank DC USN—Maxillo-Facial Prosthesis.

U.S. NAVAL ACADEMY DENTAL STUDY CLUB

CAPT W. R. Stanmeyer DC USN, Dental Officer, U.S. Naval Academy, Annapolis, Maryland established a dental study club in the Fall of 1964. Its purpose, to stimulate self-development through both literary research and presentation, has met with enthusiastic success. Meeting voluntarily once every two-weeks as a luncheon group, the selected dental

officer has an opportunity to present his topic before contemporaries who in turn benefit from the exchange of knowledge and varying techniques.

AMERICAN STOMATOLOGICAL SOCIETY OF JAPAN MEETS

CAPT D. E. Cooksey DC USN, Force Dental Officer, COMNAVJAPAN, and President, American Stomatological Society of Japan, announced the 13th Annual Meeting of that organization 10-12 May 1965 in Camp Zama, Japan. Sixty-two Japanese dentists attended the three-day professional seminar which consisted of eleven essays, thirteen table clinics, and six professional films. Eight Japanese dentists were among the professional contributors.

The following Navy dental officers offered presentations as indicated: CAPT W. A. Nelson DC USN, Diagnosis of Facil Roentgenograms; CAPT L. L. Gunther DC USN, Treatment of Exposed Hypersensitive Dentin; CAPT F. B. Rhobotham DC USN, Pedodontics in the Operating Room; CDR J. W.

Hays DC USN, Broken Stress Attachments for Partial Denture Prosthesis; CDR H. D. Tow Jr. DC USN, The Functional Bite in Crown and Bridge; LT R. S. DeWaters Jr. DC USN, Anesthetic Complications and Office Emergencies.

HEAD, DENTAL DIVISION RESERVE BRANCH VISITS PHILADELPHIA RESERVES

CAPT Robert F. Tuck, DC USNR, the Bureau of Medicine and Surgery's representative for Dental Reserve matters met with Philadelphia's Reserve Dental Officers on 7 June 1965 at the U.S. Naval Hospital. LCDR S. L. Seigel, DC USNR-R, Commanding Officer of Naval Reserve Dental Company 4-1, hosted the meeting and coordinated the meeting with members of Dental Companies 4-8 and 4-9. CAPT Wendell Naish, DC USN, Dental Reserve Program Officer for the FOURTH Naval District, introduced CAPT Tuck who talked on the Reserve Program and the Role of the Reservist in the present world situation.

OCCUPATIONAL MEDICINE

DETECTION AND REHABILITATION OF THE PROBLEM DRINKER IN INDUSTRY

*Robert M. Clyne, M.D., Wayne, N. J., Journal of Occupational Medicine,
7(6) p. 265, June 1965.*

Alcoholism is a medical, social, and economic problem which has troubled man ever since he first discovered the effect of alcohol upon his nervous system centuries ago. There have been few, if any, problems as prevalent for so long that are still enshrouded in so dense a fog of ignorance and confusion.

Prior to the past few decades, there was no general recognition of the fact that people with a drinking problem belong to a distinct group with distinct characteristics. It was believed that all people who used alcohol were similar and that whether or not one became a problem drinker was merely a matter of character and morals.

Today we know that alcoholism or problem drinking is a disease. It is a disease with identifiable

causes, with different manifestations in different people, and most important, a disease about which something can be done. It often begins as heavy social drinking and progresses slowly and inexorably by stages toward disaster. The following aspects of the disease are characteristic:

1. The patient often does not recognize or admit that he has an alcohol problem and attributes his abnormal drinking to other reasons.

2. When he is not drinking, the problem drinker is usually a more conscientious, more intelligent, harder working employee than the average.

3. The disease, which is progressive over a period of 10-20 years, usually becomes fullblown at 45-55 years of age. The patient is ordinarily powerless to stop its progression without assistance.

Although psychologic studies on alcoholics have failed to reveal a specific pre-alcoholic personality, it has been found that all alcoholics, no matter what their background, tend to become very much alike in behavior. All start with a mild social or psychological dependence, then develop a physiological dependence, and finally reach the true addictive state. At this stage, anyone can recognize the disease, but in order to facilitate rehabilitation, much earlier recognition or detection is required. Biochemical studies conducted recently at Harvard University have shown marked depression of alcohol dehydrogenase in the livers of chronic alcoholics. Unfortunately, here too, we have a late effect which cannot be used as a tool for the early detection of alcoholism. Therefore, at the present time we must be content with identification of middle stage or fully developed alcoholics.

A simple definition of alcoholism that is acceptable and meaningful to the layman is difficult to find. A definition that has found good acceptance in industry is as follows:

Alcoholism is an illness resulting in a behavior disorder which is brought about through uncontrolled or excessive drinking of alcoholic beverages. An employee suffering from alcoholism becomes a problem drinker and a concern to the company when his drinking habits affect his work performance and the welfare of his family.

While this is not sufficiently comprehensive to cover all cases, it is a workable definition for industrial medical purposes. Alcoholism (or preferably problem drinking) defined in this manner has been shown by reliable surveys and actual industrial experience to have an incidence of about 3% in the employed population of the United States. Of the 5 million alcoholics in this country 1.7 million are employed in business and industry.

Alcoholism ranks among the four major health threats along with heart disease, cancer, and mental illness. Many executives are skeptical about so high an incidence because only the most flagrant cases ever come to their attention. Most cases remain hidden because of reluctance on the part of the individual and/or his supervisor to discuss such problems until the disease has progressed to a point where it can no longer be hidden.

The price which industry pays for indifference to the problem is enormous. Surveys have indicated that problem drinkers cost industry 3 or more times as much as other employees for sickness benefits, absenteeism, accidents, and inefficiency.

Wage losses through absenteeism in industry due to excessive drinking have been estimated at \$432 million per annum. In addition, impaired and reduced productivity, frequent accidents, and loss of valuable personnel after years of investment in their training, have been conservatively estimated as costing industry more than 600 million dollars a year—thus the expression, “the billion dollar headache.”

Absenteeism related to alcoholism shows an interesting pattern. In the lower-salaried and hourly-wage groups it takes the form of poor attendance, whereas in the higher-salaried groups attendances often very good but “on-the job absenteeism” is high. It is impossible to estimate what the “half-man” costs industry through non-performance, errors in judgment, and faulty decisions. It is upon these higher level employees, who receive minimal supervision, that a company depends heavily for intelligent decisions and mature judgments. When these are unreliable, the results often are not immediately apparent. At these higher job levels, poor attendance might be far less costly than “on-the-job absenteeism”. During the past 15 years, a number of large companies have adopted programs to deal with this problem. All of these programs have certain basic factors in common:

1. They are concerned only with problem drinking. There is no interest in social drinking and no desire to intrude upon the employee's private life.
2. They recognize that problem drinking is a progressive disease and not a moral problem and that it can be successfully treated.
3. They recognize that a sympathetic and understanding attitude on the part of the corporation is essential to recognition, diagnosis and rehabilitation.
4. They take the view that the disease must be handled, like any other nonoccupational disease, as a medical problem, by medical personnel, relying largely upon outside treatment facilities.
5. They employ disciplinary action only if the employee is not cooperative in making a conscientious effort to rehabilitate himself. Such a policy is equally applicable to any other disease.

After a realistic program to control problem drinking has been established, virtually all companies discovered that their employees did not differ from the general employed population of the United States insofar as an incidence rate of about 3% is concerned. Many were surprised to find that, with a sound program, rehabilitation can be achieved completely in 50-60% of cases and partially in another 15-20%, and that rehabilitated employees are often

far better than average employees. Most companies with experience in this field have felt that the benefits of a program far exceed its cost which is ordinarily nominal. These benefits are realized not only by the employees and their companies, but also by the employee's families and the communities in which they reside.

On September 30, 1961, our company, with some 30,000 employees, introduced its program for the rehabilitation of the alcoholic employee. It was decided to introduce the program initially at those plants which have full-time nursing and physician coverage. At a later date this would be expanded to those locations where we have full-time nurses but part-time physicians. Finally, smaller plants, sales and branch offices would be included. As of this date, the program is in effect at 12 plants with an employee population of 13,500.

Program

The first phase of the program involved the orientation and indoctrination of company physicians and nurses and training personnel. In addition to receiving a complete copy of the program, the medical personnel were given copies of "The Problem Drinker on the Job", by Harrison M. Trice; "The Alcoholism Complex", issued by Christopher D. Smithers Foundation; "Saving Men and Money", distributed by the Chicago Committee on Alcoholism; and "Alcoholism and Nursing", by R. Margaret Cork. Medical personnel became familiar and established working relationships with outside referral agencies and with known members of Alcoholics Anonymous working at their plant.

The next step was the initiation of a training program for supervisors. Supervisors (all individuals occupying positions as line foremen and higher) were considered the keystones of this program, since they are called upon to recognize and refer problem drinkers. The training program consisted of four sessions each approximately 2 hr. long, the first three of which were given 1 week apart. The fourth session was given approximately 3 to 6 months after the program had been introduced locally. During the first training session, supervisors were informed that it was their responsibility to become familiar with the nature of alcoholism and with the problem it represents to the employees and to the company. A supervisor was expected to be able to detect signs of problem drinking within his work group and was responsible for referring the employee to the medical department for help. He was not to "cover up" for these individuals or

attempt to solve their difficulties. He was to avoid any discussion based on moral or social views of the alcoholic's behavior and confine his remarks to the effect on job performance and the importance of correcting the work deficiency. After referral to the medical department, the supervisor was required to continue to check upon the work performance and cooperate with the medical department by advising it of the situation at work and consulting with the medical staff regarding what might properly be done to encourage the employee to continue to seek rehabilitation.

An outline of the material covered by the training sessions is shown below.

First Session

(Recommended reading: Mimeographed policy statement, "A Basic Outline for a Company Program on Alcoholism," distributed by the Christopher D. Smithers Foundation.)

1. Introduction by management
2. Presentation of outline of program as adopted by the company
3. Discussion of purpose of training session; presentation of company policy
4. Film: "To Your Health"
5. Discussion of film
6. Presentation by medical department representative giving background information about alcoholism
7. Question and answer period

Second Session

(Recommended reading: "13 Steps to Alcoholism," distributed by the National Council on Alcoholism; "Identifying the Problem Drinker on the Job," by Harrison M. Trice)

1. Review of last session
2. Films: "Case 258", and "David, The Profile of a Problem Drinker"
3. Discussion of films
4. Description of role of supervisor: recognition, referral, follow-up with medical department
5. Description of role of medical department, including referral to other agencies
6. Explanation of outside agencies
7. Presentation of three typical case histories (maintaining anonymity)
8. Distribution of questionnaire for use at next session

Third Session

(Recommended reading: "The Alcoholic Employee," distributed by Alcoholics Anonymous: "Can You Help the Problem Drinker?" by Louis Cassels)

1. Panel discussion of points raised by answers to the questionnaire of the preceding session utilizing 2 of the following persons (depending on company location): a visiting physician from community, possibly a psychiatrist; a representative from an agency, such as the National Council on Alcoholism, the local rehabilitation center, Public Health Office, etc; a representative of the labor union; a representative of company labor relations section.

2. Discussion beginning with a brief talk by each panelist on his particular material

3. Questions from the group

4. Recapitulation of the program by a medical department representative emphasizing the benefit to supervisors from following recommended policy and clarification of policy if questions are asked.

Fourth Session (Follow-Up)

1. Discussion of the program and how it is working, led by the physician

2. Description of what is known of the working of the program at other locations

3. Statement of opinion of management on the progress of the program

4. Discussion of further sources of information, including the literature which supervisors might find in libraries or could obtain from the National Council on Alcoholism or Alcoholics Anonymous

5. Distribution of questionnaire covering the feelings and opinions of the groups

When the employee is referred by the supervisor or comes to the Medical Department on his own the physician first makes a complete medical evaluation of the employee consisting of a history, physical examination, appropriate tests, and consultations. When it has been established that the employee is a problem drinker, the problem and the various means of rehabilitation available are discussed. These include use of agencies such as Alcoholics Anonymous, Consultation Clinics for Alcoholism, the medical profession, religious groups, and the National Council on Alcoholism. It is frequently wise to refer employees who are not alcoholics themselves, but whose wives and husbands are, to an

organization such as Al-Anon. Likewise, Al-Anon and Ala-Teen are also discussed with the problem drinkers, and they are encouraged to have members of their families attend sessions of these groups. In this way, the members of the family may develop more tolerance toward, and understanding of, the illness from which the employee is suffering and thereby assist in his rehabilitation. All employees who are problem drinkers are routinely referred to the local group of Alcoholics Anonymous and must attend at least three regular meetings. If indicated, hospitalization is advised and is covered, as in any other illness, by the employee benefits plan.

The physician points out to the employee that it is his responsibility to take the necessary steps to effect a recovery from his illness.

The employee is referred to the rehabilitation agency of his choice. A weekly consultation is held with the employee by the physician in the medical department. A review is made by the physician at the end of 3 months to determine if proper progress is being made. If it is evident that the employee does not recognize his problem, shows little or no interest in rehabilitating himself, and is not a good risk for the future, this information is given to his supervisor. The supervisor's responsibility then becomes that of following the company's usual policy for unsatisfactory work performance on the part of an uncooperative employee.

Various publications dealing with the subject of alcoholism are placed in reading racks, reception rooms, waiting rooms, etc. This is done to create an awareness of this condition among employees and to indicate to them that we recognize the existence of such a problem. These publications include "What Every Worker Should Know About Alcoholism," distributed by AFL-CIO Community Service Activities; "Alcoholic Anonymous" and "Is AA For You" distributed by Alcoholics Anonymous; and the following publications distributed by the National Council on Alcoholism: "Thirteen Steps to Alcoholism," "What do you mean? Alcoholism is a Disease," "What you can do if there is an Alcoholic in the Family," "Alcoholism—disease or disgrace?" "Alcoholism is a Disease" by Marvin A. Block, M.D., "The Keys to Recovery," "Danger Signals for Women Drinkers" by Thomas J. Fleming, "What can be done about Alcoholism" by Ruth Fox, M.D., and "Of Cats and People."

All Directors of Medical Services were given the names and locations of local agencies which would be of assistance to them in the implementation of this

program. (The list was supplied by the National Council on Alcoholism.) They were also given lists of hospitals which would accept such employees for in-patient care and which would satisfy the insurance carrier's definition of a legally constituted hospital. In addition, information was disseminated among the employees indicating the medical hospital, and disability benefits which would be afforded them during their recovery and their subsequent rehabilitation.

Results and Discussion

During the 3 years since the program was introduced 107 problem drinkers have been seen. Forty-six employees were undergoing rehabilitation and

are actively employed, 15 were terminated for problem drinking, 4 retired, 2 died, 38 refused rehabilitation but are still employed, and 2 are currently hospitalized.

We are reluctant to draw any conclusions from these data because of the well-known vagaries of this disease, but we are cautiously optimistic. In the opinion of most authorities in this field, a minimum of 5 years should elapse following introduction of a rehabilitation program before any meaningful data can be obtained.

Universal acceptance of the program has not been obtained. Continued education will go far toward lessening resistance and will also erase the moral and social stigmas which have been associated with this condition for so many years.

HOW SAFE ARE HEALTH WORKERS?

THE NURSE'S ROLE IN CLINIC AND HOSPITAL SAFETY

*Leola P. Burnham, R.N. Rochester, Minn.
Proceedings of The President's Conference on
Occupational Safety Bulletin 263, page 112-114,
June 23-25 1964.*

To be good health risks in a clinic or hospital environment, workers should be in reasonably good physical health and properly placed where their job capabilities have been considered. People in excellent health usually do a superior job, and their robust appearance lends a certain assurance to their patients and co-workers.

Nurses can assist medical consultants with physical examinations of individuals whose employment has not yet begun. At the Mayo Clinic, these pre-employment examinations include urinalysis, determination of hemoglobin concentration, leukocyte count, serologic test for syphilis, x-ray of chest, and tuberculin skin test. For those individuals whose prospective work may make special evaluation of the back necessary, x-rays of the lumbar spine are also made. The Minnesota Multiphasic Personality Inventory is included with the routine tests, though it is not used as a placement or employment device but for research purposes only. Simple tests of vision and hearing are conducted by nurses. After the examination and tests have been satisfactorily concluded, the physician prepares his report. The findings are kept on file in the Health Service, where they serve to initiate the health record to be kept on the new

employee during his employment with the organization. A report of the preplacement examination goes to the personnel office where a work file is set up.

From this point on—through probationary to regular employment status and finally, with many employees, to the retirement stage—the health record is kept in the Health Service primarily by nurses, aided by members of the medical records team.

Close contact with the various supervisors who report illnesses ranging from slight acute problems such as colds, viral infections, and aching joints to injuries and serious ailments, gives the nurses in the Health Service an unusual opportunity to serve the employee-patient and the hospital or clinic as well.

For compliance with workmen's compensation laws and for other legal reasons, it is highly desirable that all on-the-job injuries be reported promptly to the industrial nurse. She then completes a "report-of-injury" form which is forwarded to the personnel and insurance departments. Two of the nurse's functions are to acquaint supervisors with this important procedure and to carry on a continuing program of education among supervisors and workers with respect to the prompt reporting of accidents.

Nurses adept in contacts with their patients can often accomplish much in improving attendance by keeping in close telephone or personal contact with employees absent for reasons of illness. A study done at the Mayo Clinic has proved this service to

be well worth the time it takes. We make daily contact with every employee absent for reasons of illness, unless the patient is out on convalescent leave and is doing well. Patients on convalescent leave report weekly at their own convenience.

A friendly, warm, and competent nurse can evaluate employees' complaints quickly, deciding whether the physician's advice is needed. She often can help decide whether the patient has an emotional problem which needs attention by the Health Service physician. She may help arrange for an unhappily placed person to have an interview with the personnel officer, which may result in a mutually satisfactory transfer. By virtue of her experience and training, she can often help an individual plan and organize her work on the job and at home so that fatigue will not overwhelm her, causing a health problem. The nurse, not only in the Health Service, but wherever she goes on her rounds, must be aware of her opportunities to observe, teach, and recommend wherever possible.

The safety committee of one of our hospitals conducts a safety program using posters, visual aids, and demonstrations on subjects such as how to lift and transport helpless patients, how to take advantage of the immunization program, how properly to dispose of soiled instruments, and so forth.

In our institution, we make use of pamphlets and posters on safety subjects, which are distributed at little or no cost to the clinic by various agencies, including especially the National Safety Council, of which many industries and corporations are members. Materials having special seasonal significance are available and, in our experience, can be quite effective in safety education when displayed at suitable times of the year on bulletin boards and in pamphlet racks.

In our clinic, a service is provided for special periodic survey testing of employees in hazardous areas—for instance, those working with radioactive materials, those operating certain machines, and those doing bacteriologic work.

The personnel in radioactive areas wear film badges replaced at either 2- or 4-week intervals, depending on the hazard. Persons in this group frequently have RBC, WBC, differential, and platelet blood counts. Also, a certain number have x-ray

examinations of the hands yearly, or more frequently if recommended by the responsible physician.

Personnel in the tuberculosis-contact group are given tuberculin tests every 4 months. If responses to those tests become positive, chest x-rays are made every 4 months for 1 year after the conversion. The tests of members of this group are constantly reviewed by a member of the responsible committee of physicians.

One of the less common hazards is that of animal bites in the research-animal area. It speaks well of the supervision to say that this type of injury seldom occurs.

Surgical teams working in the hospital and animal operating areas are required to wear static-free uniforms, including shoes having special static-free soles.

It is well known that in many industries certain groups of workers are exposed to especially significant health hazards. Where medical departments exist, such workers are often offered periodic examinations to ensure—for the sake of the employee as well as of the employer—that health is conserved and that no developments have come about since the last examination, which might in any way endanger the worker or his co-workers. By occasional inspection of work areas and by familiarizing herself with the nature of various jobs in her firm, the occupational nurse can often be of significant assistance in designating those employees for whom routine annual examinations are of special importance.

In the Mayo institutions, one of the employment benefits which brings satisfaction to employees and great help to the nurses is the easy availability of periodic physical examinations. Such examinations are carried out annually for employees over 30 years of age, and every 2 years for those under 30. Our periodic examination includes an interim medical history, physical examination, review of the immunization status, and performance of the usual basic laboratory studies: urinalysis, blood count, tuberculin test, chest x-ray, and, for female employees, a cervical smear. Other tests are ordered as indicated. We enjoy a very satisfactory acceptance of the periodic examination, and we think that it is a major factor in our program of health conservation.

EDITORIAL DESK

MESSAGE FROM C. G. FMFLANT

Congratulations to all personnel of the U.S. Navy Hospital Corps on your 67th anniversary. A new chapter is being written in your history of courage, sacrifice and unflagging attention to duty by those corpsmen in the Dominican Republic and Viet Nam. May your valiant record serve as a reminder to all Americans of the price of freedom and a reminder to all marines of that wonderful alliance enjoyed by our two services.—LTGEN Berkeley

ADMINISTRATIVE DISPOSITION OF RESERVISTS NOT SUITABLE FOR MILITARY SERVICE

Article 15-77(1)(b), MANMED, requires in part that certain reservists undergo a physical examination within ten days after reporting to the first equipped duty station, and, further, where it is determined such reservists may be unfit, transfer to the nearest naval hospital for further study and appropriate disposition. On occasion this has been interpreted so as to require the transfer of enlisted reservists who are considered MILITARILY UNSUITABLE to a naval hospital for disposition. Such is not intended nor desired. BUMEDINST 1910.3 provides for the processing and disposition of militarily unsuitable cases via nonmedical channels and should be followed, whenever possible.

Article 15-77(1)(b) will be clarified by a forthcoming MANMED change.—Physical Qualifications & Medical Records Division, BUMED.

CHANGES IN ARMY PG COURSES

The course "Fundamentals of Medical Support in Modern Warfare", scheduled to be conducted at the Medical Field Service School, Brooke Army Medical Center, 29 November through 10 December 1965, has been cancelled.

The title of the course "Advanced Medical Operations in Modern Warfare, to be conducted at the Medical Field Service School, Brooke Army Medical Center, 14 February through 18 March 1966, has

been changed to "Army Medical Service in Modern Warfare".

This change supersedes the former announcement in the Medical News Letter.—Professional Division, BUMED.

MEDICAL OFFICER'S COURSE IN RADIOISOTOPE TECHNIQUES AND NUCLEAR MEDICINE

<i>Class Number</i>	<i>Inclusive Dates</i>
Class #18	13 September through 5 November 1965
Class #19	7 March through 29 April 1966

The above scheduled classes will be conducted at the U.S. Naval Medical School, National Naval Medical Center, Bethesda, Maryland. In view of the limited quota and shortage of travel funds for attendance at short courses, only those Medical officers who require the course as an integral part of their residency training or as important factor in the performance of their current assignment can be authorized to attend. Travel and per diem funds will be provided in accordance with budgetary limitations. Officers who cannot be provided with travel orders to attend at Navy expense may be issued Authorization Orders by their Commanding Officers, following confirmation by this Bureau that space is available in each case.

Requests should be forwarded in accordance with BUMED INSTRUCTION 1520.8A at least six weeks prior to commencement of the requested course.—Professional Division, BUMED.

MEDICAL SERVICE CORPS ACADEMIC ACHIEVEMENT

The names of a significant number of Medical Service Corps officers were included among the thousands of college graduates throughout the country this Spring. It is encouraging to note the enthusiasm of so many MSC officers in regard to training which plays such an important role in their

career development. The names of sixteen MSC officers appeared in the April issue of the News Letter. Considering that fact, plus the following list, and the efforts of scores of other officers whose names do not appear below, it is evident that our FY 65 MSC training program has been successful

in contributing immeasurably to the professional growth of the MSC officers who were directly involved.

The following MSC officers were awarded degrees as indicated:

MBA-Health Care Administration	
LT Graydon E. Fanning	USNH, San Diego
MBA-Financial Management	
LT Francis G. Anderson	BUMED
Master of Science-Personnel Administration	
LT James I. Myers	USNH, Portsmouth, Va.
Master of Science-Chemistry	
LTJG Leo L. Laughlin	NDCTC, Phila., Pa.
Bachelor of Business Administration	
LT Harry F. Ziegler	BUMED
LT Malcom K. Law	NDC, Wash., D.C.
Bachelor of Arts Degree	
LT Lawrence P. Bowdren	USNH, Cp. Lejeune, N.C.
LT Donald J. Brideau	BUMED
LT Walter R. Conley	USNH, Gt. Lakes, Ill.
LT Francis X. Faherty	NNMC, Bethesda, Md.
LT Eugene R. Keller	USNH, Guantanamo Bay, Cuba
LTJG Roland E. McPeters	USS FORRESTAL (CVA-59)
LT Earl E. Nourigat	USNH, Gt. Lakes, Ill.
LT Frederic M. Richardson	USNH, Phila., Pa.
LCDR Frank A. Zaller	USNH, Gt. Lakes, Ill.
LT Robert K. Zentmyer	NSHA, Bethesda, Md.
LT Lonnie V. Zimmerman	NNMC, Bethesda, Md.

It is known that several MSC officers will complete their degree requirements during the summer sessions. It is also recognized that many officers are pursuing their education without BuMed sponsorship. So that the records of this Bureau and the Bureau of Naval Personnel may be kept current, officers are requested to forward evidence of educational achievements (such as individual grade reports, academic transcripts, and copies of diplomas) to BuPers via BuMed as provided for by BuPers Instruction 1520.83A.

The above list of graduates are to be commended for their educational achievements.

RADIOACTIVE IODINE 131 FROM SAMPLES OF FLUID MILK

The Public Health Service, U.S. Department of Health, Education, and Welfare, has announced development of a field method for the rapid collec-

tion of radioactive iodine 131 from samples of fluid milk. An article in the May issue of *Public Health Reports* describes the new process as being simple, inexpensive, and applicable to measuring the iodine 131 content of milk in emergency situations.

The process was developed by the Public Health Service Division of Radiological Health at its Southeastern Laboratory in Montgomery, Alabama. A plastic cartridge containing an ion exchange resin is used to separate radio-iodine from other fission products in the milk. The article points out that in unseparated fission products only a few days old, radioactive iodine is of principal public health interest because, among other reasons, it is a potential contaminant of dietary intake. When fresh fission products are present in the environment, the principal channel to human intake of iodine 131 is through fresh fluid milk.

Unseparated fission products might result from such events as industrial accidents involving a nuclear reactor or a nuclear fuel processing plant, or from detonation of nuclear weapons and other nuclear devices.

The Public Health Service said that the Division of Radiological Health is equipped to send cartridges containing an ion exchange resin to sampling points in areas where there may be concern over possible iodine 131 contamination.

A conveniently measured quantity of milk, from one to four quarts, is poured through the cartridge, which is a transparent plastic vial, 1 by 3½ inches. A plastic funnel for pouring is included in the field kit. As the milk flows through the cartridge, which has a perforated bottom, the radioactive iodine in the sample is retained by the resin. When the milk has been poured through the resin, the cartridge is capped, placed in a special container, and sent to a PHS laboratory in a mailing tube. A data card containing information concerning the milk sample also is placed in the mailing tube. The cartridge weighs approximately 6 ounces, whereas the shipping weight of a four-quart milk sample is approximately 8 pounds.

At the laboratory, the radioactivity of the iodine 131 is determined by counting the gamma ray emissions by means of a gamma analyzer.

The simplicity of this method for collecting iodine 131 facilitates the rapid determination of how much of this radionuclide is in milk at a certain location. If environmental sampling programs are stepped up to meet specific needs—for example, following the release of radioactive materials from the detonation of nuclear weapons—it is important that large numbers of samples be analyzed rapidly. This is necessary to define the radioactive release as quickly as possible, the article explains. When time is not a vital factor, several other methods of measuring iodine 131 in milk are appropriate.

AMERICAN PHYSICIANS STUDY SOVIET HOSPITALS

A five-member delegation of American physicians arrived in Moscow on June 26 for a three-week tour to study hospitals in the Soviet Union. This mission is the fifth to be sponsored under the 1964-65 United States-Soviet Health Exchange Agreement and the first to be focused entirely on the study of hospitals in Russia.

Heading the delegation is Assistant Surgeon General Harald M. Graning, Chief of the Division of

Hospital and Medical Facilities of the Public Health Service, U.S. Department of Health, Education, and Welfare. Other members of the group are Dr. Jack Masur, Director, Clinical Center, National Institutes of Health, Bethesda, Md.; Dr. Russell Nelson, Director, Johns Hopkins University Hospital, Baltimore, Md.; Dr. Edwin L. Crosby, Executive Vice President and Director of the American Hospital Association, Chicago; and Dr. Philip D. Bonnet, Administrator, Medical Center, Massachusetts Memorial Hospital, Boston.

The trip was planned as part of an overall agreement for the exchange of persons in various fields, negotiated by the Department of State with the Soviet Union. It is the 27th official mission to Russia in the health field since the exchange program was instituted in 1958. In 1963 a Soviet delegation visited the United States to study hospital administration in American hospitals.

Health facilities in more than a half dozen cities—including Moscow and Leningrad—will be visited. The group will study Russia's central administration of hospitals, plans and planning, individual hospital management, medical staff organization, and hospital and medical care of inpatients and outpatients.—PHS, DHEW, June 23, 1965.

FILM ON HEART RESEARCH

Research progress in combatting heart disease through the teamwork of medical scientists around the world is shown in a new motion picture, "Heartbeat," made available June 22 by the Public Health Service, U. S. Department of Health, Education, and Welfare. The documentary film was produced for the National Heart Institute, of the Service's National Institutes of Health, with the cooperation of the U. S. Information Agency.

Filmed in Peru, Lebanon, Uganda, Japan, East Pakistan, and the United States, "Heartbeat" is designed to help fill the need for disseminating health information from medical scientists to the public. This is the first film to date to portray international aspects of heart research.

Although "Heartbeat" focuses on six areas, depicting research supported by the National Heart Institute, it indicates that heart disease is a worldwide problem.

The documentary ranges from surgery research in modern city hospitals to studies in rural clinics, and its sequences show research and its application in: . . . Dacca, East Pakistan, where doctors diagnose an inborn heart defect in a Pakistani boy;

. . . . American University Hospital, Beirut, Lebanon, and the NIH Clinical Center, Bethesda, Maryland, where research surgeons perform lifesaving heart operations;

. . . . the mountains of Cerro del Pasco, Peru, where doctors are studying altitude effects on the hearts of people living at over 14,000 feet above sea level;

. . . . the hills of Lebanon, where scientist-physicians study and treat people suffering from a severe form of hardening of the arteries;

. . . . Tokyo, Japan, where investigators are seeking new drugs for high blood pressure and new knowledge of why heart disease is increasing there;

. . . . Kampala, Uganda, where studies of enlarged hearts are being conducted in a rural clinic and findings linked with similar work in the U. S.

Photographed with 35 mm film, "Heartbeat" is in black-and-white with narration, dialogue, and music cleared for television, and runs 28 minutes. The film (PHS-MIS 896) may be obtained on free short-term loan in either 16 mm or 35 mm prints from: Public Health Service Audiovisual Facility, Distribution Unit, Atlanta, Georgia 30333. It is also available for purchase, and information on this may be obtained from the same source.—PHS, DHEW, 22 June 1965.

COMMANDANT MARCORPS MESSAGE

I deem it a pleasure to extend hearty congratulations and best wishes of the entire United States Marine Corps on the sixty-seventh anniversary of the founding of the Navy Hospital Corps.

By our close association over the years in training and in combat, in peace and in war, there has been forged an unbreakable bond of comradeship between Marines and Corpsmen.

The bravery, loyalty and professional competence of Hospital Corpsmen have earned them the admiration and gratitude of military personnel all over the world.

Warm personal regards and best wishes for continued success.

CONCLUSIONS AND RECOMMENDATIONS OF THE AMA COMMISSION ON THE COST OF MEDICAL CARE

John A. Layne F.A.C.P., Member, Commission On The Cost of Medical Care. The Bulletin 6(2): 84-86, March-April 1965.

One of the critical goals of medicine today is the promotion of the wisest possible use of the medical

care dollar and the development of more meaningful data on the cost of medical care. An indispensable vehicle for attaining this goal is the Recommendations and Conclusions of the AMA's Commission on the Cost of Medical Care, which was approved by the Association's House of Delegates at the Clinical Convention last December.

Since it was my privilege to serve on the Commission during its 3½ year study, I have been asked to summarize the Recommendations and Conclusions and to review briefly the principal findings in the Commission's four-volume report.

Physician's Role

The Commission concluded that the physician must be made to realize the important influence he exercises on the cost of medical care. In this connection, the Commission recommended that "the physician be encouraged to be cognizant of costs to the patient without sacrificing quality of care. For example, he could specify the lowest priced drug within a group of brand equivalents, utilize hospital facilities only when necessary, review the hospital's charges to his patients, and guide his patients away from the economic wastes of nostrums and quackery.

The Commission also recommended that efforts should be made by physicians to organize their own time and professional activities in such a way as to improve their productivity and thereby lower costs to the patients.

One of the Commission's major research projects was a study of twelve professional review programs presently used by medical societies and others to prevent the abuse of voluntary health insurance and prepayment plans.

The study showed that the number of these programs is increasing, and the Commission recommended that state and local medical societies should make further efforts to establish review committees. The Commission stated that "judicious use of hospital facilities by the public and physicians is essential" and urged state and local medical societies to work with medical staffs of hospitals to form hospital utilization committees.

The Hospital

The Commission undertook a study of changing patterns of hospital care to determine whether advances in medical science, changes in patterns of illness, and a variety of other influences have had an effect on expenditures for hospital services. Ultimately, 34,000 records of patients discharged from

a nationwide sample of 64 nonfederal general hospitals during the years 1946, 1954, and 1961 were gathered and analyzed.

The study showed that "medical care purchased in 1946 is not the same as that purchased in 1961. Even allowing for better quality, the conditions being treated are not the same. Patients are being treated in hospitals today for illnesses different from those in 1946. These changes in diagnoses also affect the cost of care, since today's most common diagnoses tend to utilize more expensive diagnostic or therapeutic agents and procedures."

Between 1946 and 1961, it was found that the average length of hospital stay fell from approximately 11 days to about 8 days. During this same interval, laboratory use increased by 99%, x-ray diagnosis and therapy increased by 179%, and the use of drugs increased by 56%. The Commission concluded that "the study has documented more intensive care of the hospitalized patient which, in part, explains the rise in the cost of hospital care. "At the same time, the Commission recommended that "continuing studies be conducted to determine what might be done to improve hospital efficiency and assure proper utilization of hospital facilities and services."

In its hospital study, the Commission encountered a great variety of record-keeping systems, as well as many different formats of records. It concluded that this diversity "serves no apparent useful function" and recommended that the AMA, American Hospital Association, American Association of Medical Record Librarians, American Nurses Association, and representatives of medical and social research agencies work together to standardize record formats and record-keeping systems.

Hospitals and physicians were also encouraged to explore the use of electronic data processing systems in medical records departments.

Significant Medical Advances

A study of significant medical advances by the Commission underscored the fact that many of the items which are now considered essential to medical practice were not available a quarter-century ago. An analysis of five significant medical advances, documented not only their importance in providing medical care but also their economic and social benefits.

For the first time, a list was prepared showing what each specialty considers to be the most sig-

nificant developments during the period 1936-1962. Then, consultants to the American Medical Association's Council on Drugs were used to prepare a list of the 30 most significant pharmaceuticals developed during that past 25 years.

From this project, the Commission concluded: "The study of significant medical advances documents a record of outstanding progress. Quality changes in medical care have contributed greatly to improvements in the health level of the United States, as a result of which the incidence of disease and the composition of the population have been altered."

The Commission recommended that the AMA maintain a current list of all medical advances by specialty, document their economic impact, and disseminate this information to the communications media.

Medical Care Price Index

The Commission's study of the Consumer Price Index showed that medical care goods and services have risen over the long inflationary period between 1935 and 1963 only slightly more than the average price levels of all goods and services—136% compared with 123%. The most rapid and extended rise occurred in the index for hospital daily service charge which increased 480% since 1935.

It was found that the index for medical care, less hospital rates and hospitalization insurance, shows that the average price of the other medical care items rose considerably less than the general price level—91% compared with 123%. Physicians' fees increased 112% and the index of prescriptions and drugs rose 43%.

The Commission reported that "although the Medical Care Price Index continues to increase, the rate of increase has been leveling off in recent years. Since 1957, the annual rate of increase has been declining gradually and steadily from 4.8% for 1957-58 to 2.2% for 1962-63."

The Commission was quick to point out that the Medical Care Price Index does not account for the vast amount of quality changes in medical care which have occurred and which the Commission had documented.

It pointed out that "since 1939, \$650-\$700 has been factored out of the price of a car" in the price index. Then it asked:

"What account of quality changes in the medical care field has been taken . . . ?"

The Commission recommended that "careful

study be given to the need for comparison of the prices of equivalent services from base periods to the present. When measuring changes of prices of medical services from one point in time to another, adjustments for changes in quality may be necessary to assure that comparable comparisons result. Research has demonstrated that comparisons of prices of medical services have been biased by assuming that services have remained the same over the years."

The Commission recommended that "a task force of representatives from the American Medical Association, American Hospital Association, American Dental Association, Pharmaceutical Manufacturers Association, Health Insurance Association of America, Blue Cross-Blue Shield and others be established to review critically the medical care components of the Consumer Price Index and make additional recommendations to the Bureau of Labor Statistics on the methodology and composition of the CPI."

Conclusion

It could be said that the medical profession is the

victim of its own success. Because of what it has been able to achieve through scientific education and research, it has helped to create certain problems in the socio-economic area.

The medical profession must impress upon the public that it is getting a quality product and that the price is well worth it. At the same time, physicians must make certain that the wisest possible use is made of health care dollars no matter from what source. This means working conscientiously to see that health care facilities and services are utilized properly. It also means physicians must continue to live up to high ethical standards as they always have in the past. Patients have every reason to feel confident in the physician's ability but they must also be reassured that all good physicians stand ready to protect the public from the activities of the occasional "black sheep." Certainly more effective methods of keeping such physicians in line need to be developed. Any physician who is concerned about medicine's image today should seriously concern himself with these problems.

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